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Heart Disease and Hypertension

a SYMPOSIUM in the MEDICAL CLINICS OF NORTH AMERICA

The great interest in heart disease, its frequency in general practice, and the importance of its diagnosis and treatment led us to devote a large portion of the September issue of the *Medical Clinics of North America* to a Symposium on this subject.

The *48 actual* cases here presented are such as you will meet daily in your general practice. They are *not* rare cases of mere academic interest, but the very same type of cases which come daily into your office and which you must treat at the bedside. They include:

- Congenital heart disease
- Cardiac infarction without history of pain
- Clinical observations on essential hypertension
- Hypertension with a benign course
- Pulmonary embolism complicating and simulating coronary thrombosis
- Epochal heart disease
- Arteriosclerosis
- Progressive relaxation in the management of hypertension
- Hypertension, nephrosclerosis, and nephritis

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DEHYDRATION ATTENDANT ON SURGICAL OPERATIONS

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AND
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Water is the principal constituent of the body and is essential to the life and activity of every cell. In conditions of health a person automatically cares for his water needs through response to hunger and thirst; in conditions of disease the water supply is frequently governed by the physician. To care for these important water requirements intelligently requires a knowledge of the water losses and gains under all circumstances connected with disease. This study was undertaken to evaluate the water losses of the body during operation and in the recovery period of four hours after operation.

Water, comprising 70 per cent of the body weight, is ingested in greater amounts than all other substance combined. It is importantly concerned with the excretion of waste products and the dissipation of heat. In health the body holds a fixed amount of water and excretes whatever water is excessive. The study of this water balance necessitates the determination and calculation of the four sources of water to the organism and the three sources of excretion of water from it. The factors involved in water balance are as follows:

Intake	Output
1. Water of food.	1. Water of urine.
2. Water drunk.	2. Water of stool.
3. Water of oxidation.	3. Insensible water.
4. Preformed water.	

INTAKE

1. The amount of water in ordinary solid food is comparatively high. Meats run over 50 per cent water content, while vegetables and fruit are generally above 75 per cent water. The regular house diet in the University Hospital yields about 1,000 cc., and the soft diet has a water content of about 500 cc. of water a day. This source is therefore a real but varying percentage of the total water intake.

2. The average daily intake of fluids drunk varies greatly from day to day. Atwater and Benedict [1] found totals of from 833 to 1,407 cc. with the subject during light activity, averaging 1,267 cc. for forty-nine days. With increasing work the average amount ingested rose to 2,045 cc. For general considerations one may take about 2,000 cc. as the average adult intake.

3. Water is formed by the oxidation of the hydrogen of the foodstuffs in proportion to the amount of these materials consumed. The total amount is proportional to the total metabolism and is in the neighborhood of 300 Gm. for persons at light activity.

4. The preformed water is the body water that is attached to the tissues in the normal manner and is set free when tissue is oxidized. Similarly deposition of new tissue is attended by the retention of a corresponding amount of water. This amount is ordinarily so small as to have no important bearing on the total water balance, but in starvation may reach a value of 250 Gm. per day.

OUTPUT

1. In general, the amount of urine voided varies from 800 to 3,000 cc. daily. The weight of the urinary solids may be determined if accuracy is desired.

2. Water loss in feces of normal man is generally not more than 200 cc., usually between 60 and 150 cc. daily.

3. There is a continuous insensible loss of water from the skin and lungs that is always a large amount and may be the greatest increment of outgoing water even under normal conditions. The insensible loss of weight is made up largely but not entirely of water vapor. The body is continuously giving off water and carbon dioxide. The sum of these two obviously results in a progressive loss of weight which is slightly counterbalanced by the simultaneous absorption of oxygen. The relationship may be conveniently expressed as an equation, thus:

$$\text{I. L.} = H_2O \text{ vapor} + CO_2 - O_2$$

or

$$\text{I. L.} - (CO_2 - O_2) = H_2O \text{ vapor.}$$

The actual determination of the insensible loss (I. L.), carbon dioxide (CO_2) and oxygen (O_2) by Wiley and Newburgh [2] showed that the water vapor varies from about 85 to 100 per cent of the total insensible loss. Generally it is well over 90 per cent. The conditions under which we worked did not permit such an analysis of the loss by our patients, but it is safe to assume that about 95 per cent of the weight thus lost in the operating room is water. Newburgh, Wiley and Lashmet [2b] studied the insensible loss in eight persons at normal activity over long periods of time and found this daily water loss to average from 1,000 to 1,550 cc. To this insensible loss a considerable amount may be added by the running away of sweat.

From the Department of Surgery, University of Michigan.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Atwater, W. O., and Benedict, F. G.: Metabolism of Matter and Energy in the Human Body, U. S. Agric. Dept., 1903, Bull. 136.

2. (*a*) Wiley, F. H., and Newburgh, L. H.: The Relationship Between the Environment and the Basal Insensible Loss of Weight, J. Clin. Investigation **10**: 689 (Oct.) 1931. (*b*) Newburgh, L. H.; Wiley, F. H., and Lashmet, F. H.: A Method for the Determination of Heat Production Over Long Periods of Time, ibid. **10**: 703 (Oct.) 1931.

Increased metabolism or an uncomfortably high environmental temperature will increase the insensible loss.

In conditions of disease, when it is so important to maintain normal body water, it is often difficult to establish a sufficient inflow, because patients commonly refuse or are forbidden food and drink. Water may be conserved by the kidneys putting out as highly a concentrated urine as possible. This, however, may not be in sufficient quantity to get rid of the ordinary excretory substances, so that retention of nitrogenous and other waste material may occur. Instead of the normal insignificant loss of water from the gastrointestinal tract, diarrhea and vomiting may result in great losses. As shown by Orr and Haden[3] and Gamble and his colleagues,[4] the loss of water in this manner is accompanied by a serious loss of the sodium and of the chlorides it contains. Through this whole period, the insensible loss of water continues in spite of the curtailed intake. Fever, by increasing the metabolism, increases the insensible loss. The sweating of patients in the operating room and during the period of immediate recovery causes a further great outpouring of water. The study undertaken to evaluate the factors of fluid loss during this period was carried out as follows:

TABLE 1.—*Major Calculations for One Patient, Showing Method Used*

	Operation Period		
Patient no. 9—Partial gastrectomy for carcinoma			
Height, 66 inches. Body surface area, 1.57 sq. meters			
9:40 a.m.	Weight of patient		51,125 Gm.
9:45 a.m.	Anesthetic started, nitrous oxide and oxygen plus ether vapor		
11:48 a.m.	Anesthetic ended, moderate diaphoresis		
12:03 p.m.	Weight of patient and dressings	50,305 Gm.	
	Corrections: to be added		
	Weight of vomitus	37 Gm.	
	Weight of specimen	127 Gm.	
	Weight of blood lost	277 Gm.	
		50,746 Gm.	
	Corrections: to be subtracted		
	Weight of dressings	181 Gm.	
			50,565 Gm.
Weight of insensible loss plus moderate visible sweating			560 Gm.
In grams per square meter of body surface per hour, 149.8			
	Postoperative Period		
12:03 p.m.	Weight of patient and dressings		50,305 Gm.
4:12 p.m.	Weight of patient and dressings	51,761 Gm.	
	Correction to be subtracted		
	Subpectoral infusion 5 per cent dextrose (No vomitus, no urine voided)	1,746 Gm.	50,015 Gm.
Weight of insensible loss plus slight visible sweating			290 Gm.
In grams per square meter of body surface per hour, 44.5			

The patient urinated just before leaving the ward. In the anesthetizing room, measurements of the skin temperature were taken. The top of the transporting stretcher coud be lifted off as a flat pan. The pan, patient and covers were then weighed on a platform scale accurate to 5 Gm. The patient was shifted to the operating table, and a new gown and covers were applied. The pan and the original covers were then weighed, in order to obtain the weight of the patient. During the course of the operation, measurements of the skin temperature were made. The temperature and humidity of the operating room were taken several times and averaged for the period. The weight of the vomitus, all tissue removed, the fluid taken up by the aspirator and the dressings used was carefully noted. The amount of blood lost during the operation was determined by the method of Gatch and Little.[5] At the end of the operation, all visible perspiration on the patient's body was wiped off and a dry gown and blanket were applied. The patient was shifted to the stretcher and the weight of the patient determined. The water exchange of the patient was followed in a similar manner for the immediate postoperative recovery period of four hours. A typical example of the major calculation for one patient is shown in table 1. The results of this study on eighteen patients during operation are shown in table 2.

For purposes of discussion, the cases may be divided into two groups, the first comprising cases 1 to 12, inclusive, which were studied under conditions of operating room routine with the usual coverings of a light blanket over the shoulders and thorax of the patient, another over the legs, a cotton shirt, leggings and surgical drapes. The second group comprised cases 13 and 18, inclusive, with a covering only of a shirt, leggings and drapes.

The water loss due to vomitus obviously will vary greatly with many factors of anesthesia and the patient's lesion. In the patients observed, the water lost from vomiting was small, and in no instance was it a factor of importance in the total outgo of water. It is obvious, however, that in patients with acute lesions of the abdomen such as intestinal obstruction the water loss from vomiting might be enormous. An accurate knowledge of the amount would be imperative to a proper maintenance of the water balance.

The blood loss as given in the figures is probably from 5 to 10 per cent less than the actual amount because of the inability to recover all of the hemoglobin from the sponges, drapes and instruments. These amounts are in accord with those published by Gatch and Little.[5] In most cases the amount of blood lost is not great and does not have a marked influence either on the fluid balance of the body or on the total blood volume. In general, the operator is surprised to find the blood loss as high as calculated, since he does not think of the gauze sponge as absorbing much blood. In one instance (case 8), a large, obese woman on whom a radical amputation of the breast for carcinoma was performed, there was a large loss of blood amounting to 1,272 Gm. This blood loss was not due to any one violent hemorrhage, but to many small venous hemorrhages that were absorbed rather than stopped by gauze packing. This patient had mild postoperative shock undoubtedly due to the loss of blood. It is probable that most surgeons underestimate the amount of blood lost, especially in operations such as the one mentioned, in which wide areas of the body are uncovered with many small points of hemorrhage, control of which is attempted by gauze packing. A rough estimate of the blood lost in any operation can undoubtedly be made and should be calculated as part of the total fluids lost by the body during this period, even though the blood loss alone is not regarded as serious in itself.

The water lost from the skin and lungs during the operative period is not usually appreciated and yet, as can be seen, may be a large amount. The total water lost during operation in this manner varied from 97 to 705 Gm., in general being a loss of fluids much in excess

3. Orr, T. G., and Haden, R. L.: Water and Salt Imbalance in High Intestinal Obstruction and Its Relation to Treatment, New York State J. Med. **30**: 1161 (Oct.) 1930.

4. Gamble, J. L.: Dehydration, New England J. Med. **201**: 909 (Nov. 7) 1929.

5. Gatch, W. D., and Little, W. D.: The Amount of Blood Lost During Some of the More Common Operations, J. A. M. A. **83**: 1077 (Oct. 4) 1924.

of the blood lost. In order to obviate the differences of time and the size of the patient, the insensible loss and the visible sweating were computed to the accepted standard of water in grams per square meter of body surface per hour. Wiley and Newburgh [2a] reported the normal for a subject under basal conditions to be from 17 to 21 Gm. of insensible water per square meter per hour. A comparison of this figure with those shown in the last column of table 2 demonstrates that the water loss by this method is much increased over the normal and may be as high as from eight to nine times as much as that for a patient at rest in bed.

The factors that produce this great increase of insensible loss and visible sweating are probably many and hard to deal with individually, but the total loss is the significant point.

with each rise in temperature of 1 degree after this point. Since in the clothed subject the insensible loss is not affected by humidity, the patient wrapped in blankets is not thus affected by the humidity of the operating room. A patient under blankets or a person with clothing lives in his own environment, which is influenced somewhat by the temperature around it. If the coverings are excessive, the temperature of this environment will reach the temperature of the body, and efforts at heat loss will cause vasodilatation and marked sweating. A reduction in the covering permits a greater heat loss by radiation and diminishes the loss of water by vaporization.

It was noted that straining and moving under the anesthetic were associated with greater sweating than when the patient was quiet. This phenomenon fre-

TABLE 2.—*Results from Study of Operation Period*

No.	Operation	Sex	Age	O. R. Temperature, F.	O. R. Humidity, per Cent	Anesthetic	Impression of Visible Sweating	Coverings	Vomitus, Gm.	Blood Loss, Gm.	Insensible Loss + Visible Sweating, Gm.	Total Fluid Loss, Gm.	Insensible Loss + Visible Sweating, Gm. per Sq. M. per Hr.
1	Partial gastro-enterostomy, carcinoma of stomach	M	53	84	38	Avertin + nitrous oxide and oxygen	Moderate	Blanket over legs and shoulders, gown, leggings, drapes	0	111	533	644	127.5
2	Excision thyroglossal cyst...	M	14	81	35	Avertin + nitrous oxide and oxygen	Moderate		0	174	313	487	82.3
3	Exploratory, kidney.....	F	37	78	53	Avertin + nitrous oxide and oxygen	Moderate		0	208	233	441	71.9
4	Repair inguinal hernia; appendectomy	M	20	80	28	Nitrous oxide and oxygen + ether vapor	Marked		60	54	666	780	152.6
5	Repair ventral hernia.....	M	50	75	25	Spinal + nitrous oxide and oxygen	Marked		49	92	328	469	88.3
6	Excision sarcoma of thigh...	M	50	80	20	Nitrous oxide and oxygen + ether vapor	Moderate		0	161	245	406	121.6
7	Excision teratoid tumor of abdomen	F	52	80	21	Spinal.....	Slight		1	546	180	727	62.2
8	Radical breast amputation...	F	42	82	23	Nitrous oxide and oxygen	Moderate		2	1,272	705	1,979	193.8
9	Partial resection of stomach carcinoma	M	54	82	20	Nitrous oxide and oxygen + ether vapor	Moderate		37	274	560	871	149.8
10	Colostomy.....	F	58	80	38	Nitrous oxide and oxygen	None		0	13	97	110	66.7
11	Repair inguinal hernia.....	M	25	74	25	Nitrous oxide and oxygen + ether vapor	Marked		0	13	259	272	167.6
12	Repair ventral hernia.....	F	48	78	29	Avertin + nitrous oxide and oxygen	Slight		0	147	115	262	65.0
13	Hemorrhoidectomy.....	M	29	77	14	Nitrous oxide and oxygen + ether vapor	Slight	Gown, leggings, drapes	49	8	92	149	51.8
14	Repair inguinal hernia.....	M	54	78	25	Local.....	None		0	51	192	243	40.2
15	Appendectomy.....	F	20	81	32	Nitrous oxide and oxygen + ether vapor	Moderate		8	14	166	188	116.1
16	Cholecystectomy.....	F	47	75	37	Avertin + ether vapor..	None		0	55	40	95	15.0
17	Appendectomy.....	F	15	71	20	Nitrous oxide and oxygen + ether vapor	Slight		30	13	137	180	84.2
18	Repair ventral hernia.....	F	34	76	20	Nitrous oxide and oxygen + ether vapor	Marked		27	306	347	680	113.9

Environmental temperatures above 27 C. (80.6 F.) were usually accompanied by a higher insensible and sweating loss. A comparison of case 1 with cases 2 and 3 shows a greater water loss with a higher temperature in the operating room, but other factors make comparison difficult. No constant effect of variation in humidity within the ranges observed was noted in these patients.

In the second group of patients, cases 13 to 18, a reduction in covering while under the anesthetic resulted in general in a definite reduction of the water losses. All of these facts are in accord with the findings of Wiley and Newburgh.[2a] The constant temperature of the body is maintained by a balance of the heat production with the heat loss through radiation, conduction and convection and by the vaporization of water. From a temperature of from 18 to 27 C., the body temperature is maintained largely by radiation, with about 24 per cent lost by evaporation. With an environmental temperature above 27 C., the heat lost by vaporization increases rapidly with utilization of the sweat mechanism. The water losses increase rapidly

quently became evident immediately at the onset of straining. This point is well shown by cases 1, 2, 3 and 12, in which avertin was used, compared with cases 4, 6 and 9, in which ether was added to nitrous oxide and oxygen to secure relaxation. As has been frequently shown,[6] general inhalation anesthesia and spinal anesthesia produce peripheral vasodilatation, which was noted in all of our cases. This vasodilatation interferes with the normal mechanism of heat loss.

The largest insensible and visible sweat loss was in case 8, that of a large, obese woman in moderate shock. The association of marked sweating with surgical shock is often noted and, if present, is another factor increasing the loss of water. In cases 13 to 18 blankets were omitted from the covering while the patients were in the operating room with, in general, a diminution of the

6. Ipsen, J.: Les artères et l'anesthésie, Acta chir. Scandinav. **65**: 487, 1929. Morton, J. J., and Scott, W. J. Merle: The Measurement of Sympathetic Vasoconstrictor Activity in the Lower Extremities, J. Clin. Investigation **9**: 235 (Oct.) 1930. Scott, W. J. Merle, and Morton, J. J.: Obliteration of Vasoconstrictor Gradient in the Extremities Under Nitrous Oxide-Oxygen, Ether and Tribromethyl Alcohol Anesthesias, Proc. Soc. Exper. Biol. & Med. **27**: 945 (June) 1930.

amount of water loss. The number of cases studied, however, is too small to permit of any generalization in regard to this point.

The total fluid loss during the operation varies with the type of operation, the length of the operation and a number of variable factors of the temperature, anesthesia, covering and condition of the patient. It is small, between 100 and 200 Gm., for short operations such as herniorrhaphy and appendectomy. For larger operations of a moderate severity, the total fluid loss will average about 500 Gm., and in prolonged operations with a marked blood loss, it may reach 1 or even 2 liters.

The water lost during the recovery period of four hours after operation is shown in table 3. The water lost by vomitus was absent or very slight. The principal excretion was by the insensible loss plus visible sweating. The patients in cases 1 to 12 were placed in bed, with the routine covering of a spread, woolen blanket, sheet, woolen blanket, flannel blanket and gown. In one instance, case 5, the water loss was 828 Gm., probably due to marked sweating. In the other cases the water loss was from 217 to 450 Gm. In cases 13 to 18 the covering was reduced to a spread, woolen blanket, sheet and gown, with a noticeable diminution of the water lost through the skin and lungs. The water then lost varied from a minimum of 126 Gm. to 286 Gm. The contrast is sharpened by comparing this loss as expressed in grams per square meter per hour in the two groups. The patients with the lighter covering were much more comfortable and lost on an average of 200 Gm. of water during the four hour period less than those with heavier covering. We can see no logical reason for the excessively heavy covering often used for the patient during the recovery period.

In order to compare the total fluid lost during the entire period of operation and the four hours after operation with the amount of urine excreted during this time, the patients voided or were catheterized after the last weighing. The results are shown in table 4, with the amount of urine excreted expressed in quantity and in terms of percentage of the total fluid loss. In the first twelve cases the urine output is less than 15 per cent of the total water lost during the entire time. In the last six patients the urine output rose to from 22 to 50 per cent of the total fluid loss. The total fluid lost during the period of operation and recovery by a patient on whom a laparotomy is performed will average close to a liter. Much greater losses occurred in certain cases in which there was marked sweating or blood loss. The component parts of the total loss are shown in the accompanying chart, emphasizing the relative importance of the insensible loss. The much greater amount of fluid lost by avenues other than the kidneys makes it clear that the commonly accepted clinical method of estimating the water balance by a comparison of the fluid intake with the urinary output is so inaccurate as to be worthless to the patient for whom an accurate maintenance of the water balance is necessary. We recognize the value of the specific gravity of the urine in giving an idea of the state of the water balance, granting that the concentrating power of the kidneys is normal or known. It is customary in many hospitals to chart graphically the fluid intake against the urinary output. The information thus obtained is adequate for the care of the ordinary patient operated on, but it does not represent the true water balance, as from 1,500 to 2,000 Gm. or more of insensible water may be lost by the patient in bed with fever. The body will still vaporize water in about the same amount to remove its heat even when the supply of water is so seriously diminished that anuria supervenes. There are certain sick patients undergoing operations in whom it is all important to maintain a proper supply of water. This can be done only by taking into account the water lost through the skin and lungs, vomiting and diarrhea, as well as that excreted through the kidneys.

TABLE 3.—*Result from Study of Four Hour Postoperative Period*

No.	Operation	Room Temperature	Covers	Fluid In: Mouth, Gm.	Fluid In: Infus. In-ven. Gm.	Fluid Out: Vomitus, Gm.	Fluid Out: Urine, Gm.	Impression of Visible Sweating	Insensible Loss + Visible Sweating, Gm.	Insensible Loss + Visible Sweating, Gm. per Sq. M. per Hr.
1	Partial gastro-enterostomy, carcinoma of stomach	74		0	1,241	0	0	Slight	339	47.3
2	Excision of thyroglossal cyst	73		0	0	90	0	Moderate	411	63.0
3	Exploratory, kidney	78	Spread,	0	1,842	0	0	Moderate	450	72.0
4	Repair inguinal hernia; appendectomy	70	woolen	27	0	49	0	Slight	308	40.3
5	Repair ventral hernia	78	blanket,	0	1,375	17	0	Marked	828	115.9
6	Excision sarcoma of thigh	67	sheet,	0	0	60	0	Slight	369	57.6
7	Excision teratoid tumor of abdomen	73	woolen	201	1,459	0	0	Slight	402	58.9
8	Radical breast amputation	72	blanket,	478	800	423	147	Slight	315	43.6
9	Partial resection stomach, carcinoma	75	flannel	0	1,746	0	0	Slight	290	44.5
10	Colostomy	78	blanket,	0	1,042	0	0	None	217	37.5
11	Repair inguinal hernia	73	gown	0	60	0	0	Slight	344	56.9
12	Repair ventral hernia	78		0	95	0	0	Slight	367	52.1
13	Hemorrhoidectomy	76	Spread,	0	0	0	0	None	211	31.7
14	Repair inguinal hernia	75	woolen	321	0	0	0	None	286	35.5
15	Appendectomy	76	blanket,	0	0	0	0	None	140	22.1
16	Cholecystectomy	76	sheet,	0	1,412	0	0	None	152	21.4
17	Appendectomy	76	gown	0	0	0	0	Slight	186	31.4
18	Repair ventral hernia	72		0	480	0	0	None	126	19.4

TABLE 4.—*Comparison of Urine Output to Total Fluid Loss During Operative and Four Hour Postoperative Period*

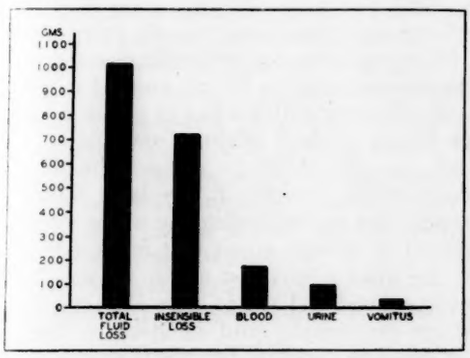
Patient	Total Loss: Vomitus, Blood, Insensible, Visible Sweat, Gm.	Urine Output Total Period, Gm.	Percentage Urine of Total Fluid Loss
1	983	115	10.47
2	988	82	7.66
3	891	75	7.76
4	1,137	105	8.45
5	1,314	113	7.92
6	835	128	13.29
7	1,129	82	6.77
8	2,717	437	13.85
9	1,161	84	6.75
10	327	56	14.62
11	616	95	13.36
12	629	86	12.03
13	360	103	22.23
14	529	175	24.86
15	328	123	27.27
16	247	249	50.20
17	366	172	31.97
18	473	163	25.63

Insensible water contains negligible amounts of inorganic salts, and in the amounts of water lost in these patients, the salt loss is not important in contradistinction to the fluid lost by vomiting, diarrhea or enterostomy, in which the inorganic salt is so important. Therefore, normal dextrose solution can be used to replace this component of the body fluids. The fact that the water lost by evaporation [2a] increases rapidly with the rise in environmental temperatures beyond 27 C. should make one inquire seriously as to whether it is wise to subject the patient, during the postoperative period, to such high environmental temperatures as are usually caused by excessive bed clothing.

SUMMARY

1. A study was made of eighteen patients on whom operations were performed to determine the body fluid lost during the operation and during the first four hours after operation.

2. During operation fluids were lost by vomitus, hemorrhage and insensibly through the skin and lungs. The amount lost by vomitus was not important; the amount lost by hemorrhage is often greater than the surgeon believes and varied with the type of operation from 8 to 1,272 Gm. The insensible loss plus visible sweating varied from 97 to 705 Gm., while this loss expressed in grams per square meter per hour is increased as high as nine times that of the basal state.



Components of average total fluid loss during operative period and four hour postoperative period.

3. During the first four hours after operation the principal water loss was through the lungs and skin, varying from 126 to 828 Gm. A comparison was made between two groups with different bed clothing. The water loss of the patients with lighter bed clothing was over 50 per cent less than that of the group placed in the routine "ether bed."

4. The factors increasing the insensible loss and sweating were the temperature of the environment, principally that produced by blankets, struggling under anesthesia and the anesthetic.

5. Under routine conditions, the total loss during the entire period averaged about 1 liter. It may be much higher in certain instances. The urinary output during this period averaged less than 10 per cent of the total fluid lost. A comparison of the urinary output with the fluid intake does not give a correct estimate of the water balance. Other factors of water loss such as vomiting and diarrhea are important and have been stressed. We wish here to emphasize another important source of water loss amounting to from 1½ to 2 liters a day by the continuous insensible vaporization from the lungs and skin.

ABSTRACT OF DISCUSSION

DR. THOMAS G. ORR, Kansas City, Mo.: Food and water, of course, may be taken by the average patient up to within a few hours prior to an operation. Certainly it is not necessary in the average case to give any cathartics at any time prior to the operation. One conserves the patient's water in anticipation of the insensible loss that must inevitably occur in a high percentage of the patients who are given ether anesthesia. The chief concern when considering this insensible loss of water, is in those patients who are greatly depleted before reaching the operating room, and in preparing these patients one must provide for this loss as well as for the loss occasioned by the lack of water and the lack of food. In other words, it is necessary to consider carefully the water balance and the metabolic balance and the chemical balance in this class of patients before one proceeds to do an operation. The results of dehydration are far reaching if the dehydration is extreme. There is a disturbance of the heat regulating mechanism, an increase of the viscosity of the blood, a decrease in the oxygen carrying capacity of the blood, a decrease in the kidney function, and a disturbance of the acid-base balance. All these may be of extreme importance, of course, if the dehydration proceeds to an advanced degree. A compilation by Dr. Rowntree a number of years ago showed the intake of secretions into the upper intestinal tract in a period of twenty-four hours. The intake of saliva, bile, gastric juice, pancreatic juice and the succus entericus into the upper intestinal tract, in other words, an intestinal circulation, which takes place every twenty-four hours, amounts to an astonishing quantity compared to the quantity of blood in the body. The daily secretion into the upper gastro-intestinal tract amounts to between 7 and 8 liters. This represents two or three times the average quantity taken by mouth in twenty-four hours, three or four times the quantity of urine excreted, and about twice the total volume of the blood of the body. One can readily appreciate the importance of this internal gastro-intestinal tract circulation. Any disturbance of this circulation must necessarily upset the metabolism of the tissues. It is this point that I wish to emphasize. I recommend, therefore, that the members of this group give this paper further study when it has been published, and I further suggest, if they have not already done so, that they review the classic articles by Rowntree and Marriott; Rowntree on "Water Balance," Marriott on "Anhydremia," which have been published in *Physiological Reviews*. Every operator doing major surgery should familiarize himself in a general way with the water and chemical balance of the body before undertaking a difficult type of operation.

DR. ISIDORE COHN, New Orleans: The authors properly emphasize the loss of water by sweating during operation in patients who are covered or overcovered. Interesting experiments prove that the loss is greater in the patients who are covered by too many blankets. They further emphasize that the amount of blood that is lost is oftentimes greater than is realized by the surgeon. It is proper to emphasize these things but I do not believe that the importance of having the patient at least properly covered should be forgotten or overlooked because the lowering of the general body temperature may have more effect on the patient than the insensible loss of water through the lungs and by sweating. It should also be remembered that the insensible loss can be guarded against by preoperatively increased fluid intake. Vomiting can be diminished by postoperative administration of fluids by other than the oral route.

DR. G. A. HENDON, Louisville, Ky.: Loss of heat can be avoided to a large extent by a simple procedure. After the abdomen is opened, if there is, in the judgment of the surgeon, an extensive operation in prospect, he can clip off the distal end of the appendix, cut and tie the meso-appendix, and insert a catheter with two or three sutures through it and the appendix to hold it in place; he can then fill the colon with water at any desirable temperature, which gives an internal hot-water bag. This measure can be pursued in the patient's bedroom and the water changed as it becomes cooler, and more warm water supplied. This will compensate for the loss of both heat and water, and the appendix will slough off in about one week. In no case have I seen a fistula result.

DR. J. SHELTON HORSLEY, Richmond, Va.: The authors call attention to a phenomenon that is frequently overlooked.

In the average surgical case, considerable amounts of fluid are lost, but in the average case the biologic mechanism works while we sleep, so that the loss is not usually felt. It is in the rather unusual case, the depleted case, the case of sepsis, the bad risk case, that this loss may turn the scale. The loss of heat, of course, has to be considered as well as the loss of water. Though not directly applicable to this discussion, the temporary loss of fluids, such as in shock, in spinal anesthesia, sometimes may occasion grave concern. This loss may be compensated for by natural methods, but the ordinary means of absorbing fluids are at least handicapped if not entirely abolished in many abdominal conditions. The patient may have peritonitis, obstruction or a gastric or intestinal operation in which the natural means of absorbing fluids are temporarily closed. The patient in shock or who has lost a large amount of blood is incapable of absorbing water from the intestine to any considerable extent. Dr. Matas called attention to a method of supplying fluids which will not only give abundant amount of fluid but give it without straining the function of the gastro-intestinal tract, which in abdominal operations at any rate should have physiologic rest. That is the intravenous method introduced ten or twelve years ago, in which dextrose is given continuously into the vein. This method has been modified by Drs. Hendon, Gallie, Harris and others. Usually I give 5 per cent dextrose in normal Ringer's solution. It supplies not only an isotonic solution of dextrose but the ordinary electrolytes, not only sodium chloride but potassium and calcium as well. In spinal anesthesia, which I use occasionally, I have adopted the method of beginning the intravenous administration of fluid at the same time that the spinal anesthesia is begun through a needle or a cannula. It can be turned on in greater volume when the blood pressure goes down alarmingly, or it may be continued at a slow rate.

DR. FREDERICK A. COLLER, Ann Arbor, Mich.: Those who have discussed the paper have added much that is practical. I did not mean to imply in the paper that the exact computations that were carried out are necessary to the well being of every patient. Most surgical patients have been getting well for many years on the usual regimen, and if one will give a pitcher of water to a patient with a normal gastro-intestinal tract he will automatically maintain his water balance. On the other hand, this information may be of some importance to the very sick patient. I think one can give it as a safe general rule that if 2.5 liters is allowed for the first day, including the time of operation, and 2 liters a day from that time on, it will represent the amount of water being lost by the body through the lungs and the skin. If one wants to wash out toxins or do anything else with the water, one must use it in quantities above that amount. The amount of water that it is desirable to give to the surgical patient falls outside the scope of this discussion and is not touched on in this paper.

Essential Qualities of Research Workers. — Research workers must have imaginative minds and natural powers of observation. The essential qualities to be looked for in a research man are honesty, common sense, balanced enthusiasm, self-confidence, tenacity, system and method in keeping notes and in planning and carrying out experiments, and unreserved devotion to the problem in hand. If a man is not honest he may deceive himself and be led to draw conclusions from false results which will not stand repetition by other workers. If a man lacks common sense he is liable to be easily side-tracked, and is led to do foolish things in the name of research. If a man does not possess enthusiasm, he very soon becomes lazy and gambles away his time, but if he becomes overenthusiastic he may become carried away and arrive at conclusions too hastily. If he lacks self-confidence, he can never convince himself or others of the value of his work. The young worker must not become discouraged even if the trend of experiment goes against theory. If he has not the tenacity to continue he will often miss out and, because of incompleteness, his work will fail. The research man who lacks method and system is like a ship without a rudder. The young worker who has not an unreserved devotion for his work is not likely to succeed. I am a firm believer that if a person tries hard enough and long enough, he will achieve whatever he reasonably sets out to do.—Banting, F. G.: Medical Research, *New York State J. Med.* **32**:311 (March 15) 1932.

TREATMENT OF CARCINOMA OF THE CERVIX

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On scanning the literature since 1900 on the treatment of cancer of the cervix one finds that three periods are represented. During the first period the surgical treatment was emphasized and the reports consisted chiefly of descriptions of operations and surgical end-results. Then there was the period of controversy concerning the relative merits of surgery and radium. During the past ten years in this country and with few exceptions on the continent, most of the literature has dealt with radiation therapy, its technic and the end-results. An analysis of these results would seem to indicate that, for the time being at least, radium and the roentgen rays are the treatment of choice, not only from the standpoint of the rate of curability, but also from the standpoint of palliation, morbidity and economy.

In this paper, I am reporting a series of 420 cases of cancer of the cervix, in which the patients were examined, treated and observed during the period from 1920 to 1931, inclusive. In this group there were 302 cases of primary carcinoma; in 80 there were recurrences following operation or irradiation elsewhere, and in 18 the lesions were too far advanced for any possible treatment. Twenty patients in this group refused treatment or sought medical advice elsewhere.

I shall not take time to discuss the diagnosis of carcinoma of the cervix. It has been dwelt on time after time. Yet on reviewing my series of cases, it is not pleasant to have to admit that in patients examined in 1931 the disease was just as far advanced as it was in those examined in 1920, in spite of numerous articles written on the subject and in spite of the publicity given it by The Society for the Control of Cancer. Despite the fact that the cervix is an easily accessible organ, failure to recognize early cervical cancer has occurred in a discouraging number of cases. Delinquency on the part of the patient is sometimes responsible, but with increasing public education this is becoming less frequent, and still entirely too many failures are attributable to the remissions of the medical profession.

Diagnostic failures come about in two ways: The symptoms may be attributed to the menopause, and frequently consultation without proper examination leaves the patient with a false sense of security which leads to further delay. The lesion may be discovered but may not be recognized as malignant, being mistaken for an ulcer, erosion or eversion. In case of doubt a biopsy is imperative. The physician's hesitancy to do a biopsy may have resulted from the active discussion a few years ago of the danger of spreading the cancer in this way. Today that discussion is dead—so are many patients for lack of a biopsy. I have never seen any harm come from it and recommend its use in any doubtful case. It will save far more patients than it will harm.

Another fallacious opinion has been advanced in an effort to show that irradiation by both the roentgen rays and radium may cause distant metastases not seen heretofore. The literature shows that many distant and

From the Cleveland Clinic.
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bizarre metastases were observed long before radium was used. If metastases are being observed more frequently now, it is because radiation has prolonged the life of the patient for sufficient time to make this observation possible. On noting the cause of death in my series, it was found that practically all the patients died with the disease confined to the pelvis with obstruction to the ureter only. Very few showed metastases to the liver, lungs and bones.

Any one who has treated a large group of patients is at once impressed by the varied individual resistance to cancer. Some patients with apparently advanced lesions respond better than those in whom the disease is recognized early. This variation in response is undoubtedly attributable to normal body defenses about which little is known. However, Broders has developed a method of evaluation of malignancy histologically, by which the prognosis in a given case may be expressed on a numerical basis, the cases being divided into four groups according to the degree of cellular differentiation. Following these lines, a tremendous amount of investigation has been carried on by other workers for the purpose of determining whether there is any definite relationship between the histologic structure of carcinoma and its relative malignancy and of trying to deduce from this finding the best form of treatment for the type in question and also of determining the prognosis. I have not been able to test this out in my series of cases, because I believe that a large personal equation enters into the problem and that direct, personal contact with Broders would be necessary in order to develop a precise duplication of his method. If not done properly, I am sure that such an attempted classification would lead to further confusion. Another complication, of course, is that sections from different portions of the tumor may give different histologic pictures which also may be misleading.

The clinical classification I use is that of the American College of Surgeons, which, for working purposes, is quite practicable except in regard to the question of involvement of the broad ligaments. It is often difficult at first examination to decide whether or not such involvement may be inflammatory or malignant, but time generally furnishes this information. I believe that cures in cases in which there is definite infiltration of the broad ligament are relatively few.

RATIONALE AND TECHNIC OF RADIUM THERAPY

For practical purposes, the simple idea that radium is a means of destroying cancer cells without too much injury to the normal cells is a good working hypothesis, but accumulating knowledge of the physics of radiation and of the biologic effects of radiation is leading to better understanding of its action. In brief, radium has a threefold action on malignant tissue: It affects (1) the cancer cells, (2) the connective tissue and (3) the blood and lymph vessels. The action on the cancer cell is shown microscopically by swelling and vacuolization of the protoplasm and by shrinking of the nuclei. This is followed by phagocytosis and absorption and replacement by homogeneous connective tissue. This contracts and affects the lymphatic and smaller blood vessels and starves the growth.

There is not sufficient time to enumerate the varieties of technic that have been used since radium therapy was instituted nor to mention all of the men who have contributed to the advancement of the present knowledge. Suffice it to say that there are two entirely different schools of thought in regard to the method of treatment. In one, the opinion is that it is best to give large massive doses within a short space of time, preferably in one or, at the most, two treatments. The other is that it is preferable to give very small doses over a longer period of time. I believe that most of the large clinics in this country favor the former view, while protagonists of the latter method are led by Regaud of the Radium Institute of Paris. This difference of opinion undoubtedly will be settled before many years elapse, when the results of both methods may be compared. Standardization of the dosage of radium used in treating uterine cancer is impracticable; the dosage and technic must vary with the character and location of the lesion.

The technic followed in the Cleveland Clinic has varied but little during the last ten years, the only change being that since a larger amount of radium has been available, larger doses have been given over a shorter period of time, and an effort has been made to give the complete dose at one sitting. Previously, the total irradiation was given in two doses. The average dose given in the first cases in my series was 4,200 milligram hours distributed evenly in and against the cervix. In later cases, since radium has been combined with roentgen rays of high voltage, the average dose is about 3,600 milligram hours. The standard screen is made of brass, 1.5 mm. in thickness, and this is encased in a rubber tube 3 mm. thick. At the present time a tube is placed in the fundus as well as in the cervix. This is done because in some patients who were treated earlier it was found that after being free from symptoms for a year or so, the patient suddenly had bleeding and discharge, and examination would reveal a large undermined cavity at the upper end of the cervical canal which had not been reached by the radium. It is necessary to anesthetize the patient in order to determine the extent of the new growth and to place the radium accurately. However, it is sometimes impossible, even when the patient is under an anesthetic, to place a tube of radium high in the cervical canal.

In addition to the radium tubes placed in the fundus and cervix, two or three tubes are placed against the cervix, and these are held in place by packing the vagina tightly with gauze. If the growth is of the cauliflower type, it is frequently curretted away or implanted with radium needles. A catheter is placed in the bladder in order to keep it empty and as far away from the radium as possible. Care should be taken in transferring the patient from the table to the cart and from the cart to the bed. Bending and twisting of the patient during the transfer may dislocate the vaginal tube and may account for bladder and rectal symptoms. The best method is to place the cart alongside the table and to slide the patient on the cart by means of a sheet, and to transfer her from the cart to the bed in the same manner, so that the position is unchanged throughout the procedure. Gold seeds have not been used in the treatment of any of the patients, but they are of great value in cases in which there has been recurrence, because their action is localized to a greater or lesser extent. Large heavily filtered doses frequently are harmful in the treatment of lesions that have recurred. In this series there has been no case in which gold seeds were placed in the broad ligaments by laparotomy. From three to four weeks after treatment with radium the patient returns to the clinic for a course of treatments with high voltage roentgen rays, given in five or six doses during a period of five or six days.

After patients have been treated they are requested to return at monthly intervals for three months, and afterward every three months during the following year. If local recurrences develop, they are treated by means of implantation of seeds. If the recurrence is deep, roentgen therapy is repeated, with marked relief for a time. In cases of intractable pain in the pelvis and down the legs, cordotomy may be done. Section of the sensory column in the cord affords amazing relief from pain.

COMPLICATIONS

The chief complications in the treatment of carcinoma of the cervix by radium are hemorrhage, symptoms referable to the rectum and bladder and fistulas, both urinary and fecal.

Hemorrhage.—This may be due to the natural progress of the disease or to ulceration caused by the radium. I believe that the natural progress of the cancer is the principal cause of hemorrhage. In the most serious cases packing and transfusion are sufficient to control the hemorrhage.

Bladder and Rectal Symptoms.—These symptoms are of two types, early and late, and it is quite important that they should be recognized. It is reasonable to assume that if a sufficient dose of radium is given to cure carcinoma of the cervix, it will also be sufficient to produce an erythema in the rectum or bladder. Frequently this erythema is slight and passes unnoticed unless the patient is questioned. If it is severe, it is evidenced by a burning sensation and a tendency to frequency of urination or defecation. In mild cases, the condition usually clears up within ten days or two weeks, but in severe cases from four to six weeks may be required. It is in the latter group, in which the symptoms persist, that late rectal and bladder complications may develop, usually six or eight months after the initial irradiation. These late symptoms frequently are mistaken for a recurrence of the carcinoma, and if the patient is given additional treatment with radium, irreparable damage may result. A clue to the true state of affairs is found in the fact that the symptoms are out of all proportion to the findings. There are severe pain and tenesmus, and the stool contains considerable blood and mucus. Digital examination causes greater pain than in the case in which there is recurrence of the malignant lesion. The patient is not cachectic. Proctoscopic examination reveals, approximately at the level of the cervix, a puckered scar or small ulcer with telangiectasis and considerable redness of the mucosa. The condition may be compared to an overtreated area on the skin which is healed by the formation of scar tissue through which fine vessels may be seen to course. In the rectum the scarring is subject to trauma and infection with subsequent ulceration, which causes the late symptoms.

The same general condition is to be found in cases in which there are late bladder symptoms. Cystoscopic examination may reveal an area of intense redness and, at times, ulceration. I have observed several cases of this type over a period of months, and a few over a period of two years. Occasionally the urinary salts will be found deposited in the slough in the bladder, and stones will be formed. For the rectal symptoms the treatment consists of rest in bed, cleansing of the lower part of the bowel and the injection of 3 or 4 ounces (89 or 118 cc.) of warm olive oil into the rectum twice a day. Occasionally an opium suppository is necessary. For the bladder symptoms rest, irrigation of the bladder and the instillation of gomenol are prescribed. Sometimes these bladder and rectal complications may not disappear for from four to six months.

Fistulas.—It is known that the natural progression of carcinoma of the cervix will cause a certain number of fistulas into the rectum or the bladder. In some of my earlier cases fistulas may have resulted from treatment of the carcinoma, but with present knowledge and the improved methods of treatment, I feel sure that the incidence of fistula will be lower than in cases in which the patient has received no treatment at all. If the fistula appears soon after treatment, it is interpreted as being due to destruction from the disease. If it appears late and there is no evidence of recurrence of the carcinoma, it probably is due either to progressive ulceration or to the later complications mentioned, and hence is the direct result of the treatment with radium.

The method of treatment of a fistula in the rectum must depend on its size and the amount of inconvenience it causes the patient. A small fistula may not require treatment. If a large fistula is present, it may be advisable to do a colostomy before attempting to repair it and to close the colostomy if and when the repair is successful.

Results in Treatment of Carcinoma of the Cervix

	Year	Treated	Traced	Number	Per Cent
Living over 5 years.....	1920	8	8	2	25
	1921	17	15	4	24
	1922	22	21	5	23
	1923	26	23	5	20
	1924	24	21	7	30
	1925	21	17	5	25
	1926	30	25	9	27
		148	130 90%	37	25
Living 3 to 5 years.....	1927	32	26	9	28
	1928	13	10	4	30
		45	36 80%	13	29
Living 1 to 3 years.....	1929	48	42	24	50
	1930	35	31	19	54
	1931	32	32	28	87
		115	105 90%	71	61

The urinary fistula is more annoying on account of the constant flow of urine. If the fistula is small, it can be repaired easily by operation. If it is irreparable, the patient may be made more comfortable by transplantation of the ureters into the sigmoid.

Of the total number of patients with primary carcinoma of the cervix coming to the clinic, some attempt at treatment has been made in 93 per cent. The remaining 7 per cent were moribund on admission. The accompanying table gives the statistics of the results of treatment in 303 cases of primary carcinoma of the cervix from 1920 to 1931, inclusive. All patients not traced are counted as dead. It will be seen that of 148 patients treated over five years ago, 37, or 25 per cent, are alive and well. Twenty-nine per cent are living after from three to five years, and 61 per cent are living under three years.

With increasing facilities throughout the country to take care of these patients, it seems to me that the biggest problem still remains, that of getting the patients to seek medical advice when the disease is still in an early stage.

ABSTRACT OF DISCUSSION

DR. W. P. HEALY, New York: In cancer of the cervix, early diagnosis is impossible except by accident. The majority of the cases of cancer of the cervix begin beneath the mucous membrane, are of the anatomically infiltrating type, and fail to give symptoms while they can be regarded as early cases. The only symptom the woman has which may lead her to suspect cancer is the appearance of blood as the result of contact, following intercourse or the use of a douche tube, or occurring between periods from ulceration. She cannot have bleeding without having destruction of tissue, and destruction of tissue must mean open lymphatics, through which cancer cells are readily disseminated beyond the primary focus. This is why early cases are not seen. Ninety-four per cent, approximately, of these cancers of the cervix develop in women who have borne children. I believe more attention should be given to prophylaxis in cancer of the cervix, probably much more than to treatment. A report from the clinic of Dr. Graves, at the Brookline Free Hospital for Women in Boston, indicated the great value of the use of the cautery in the treatment of nonmalignant cervical lesions. In approximately 2,500 of their cases so treated with the cautery for benign lesions of the cervix, over a period now of many years up to the present time, in no single instance has cancer appeared in any of those cervices subsequently. On the other hand, in cases of cervical disease which they regarded as suitable for plastic surgery, their pathologist reported cancer of the cervix as an accidental finding in some of the cases. If the same men, therefore, made an error of diagnosis in a case that they thought suitable for plastic surgery, it seems to me reasonable to assume that they must have used the cautery in treating cases of early cancer of the cervix through an error in diagnosis, and certainly they cured the patients, because in no single instance of the 2,500-odd cases has cancer appeared. Therefore, I believe it is the duty of physicians to follow cases of pregnancy more closely in their first six months post partum than is customary, because with the present-day methods of office treatment of cervical lesions with a cautery, the cervix can certainly be restored to a normal condition readily and easily.

DR. WALLACE FRANK, Louisville, Ky.: From 1917 to 1927 I treated 180 cases of primary carcinoma of the cervix. A follow-up was conducted on those last October, and replies were received from about 100. It must naturally be assumed, therefore, that the other 80 patients are dead. Many of the cases were well advanced and were treated for palliation alone, to relieve the bleeding and to relieve discharge. Of the number of cures of patients who are alive from five to fourteen years after treatment, there are thirty-four, giving a percentage of cures of 18.9. Dr. Healy just remarked about the rarity of finding early cases. In my 180 cases there were but 15 early ones, and 12 of the patients are now alive; one lived eight years and died of apoplexy without any return of her disease, and two are dead, giving a proportion of cures in the early cases of 86.4 per cent. I might say that all these patients were treated by x-rays and radium or by radium alone. I am not operating on cancers of the cervix any longer. In but two cases did fistulas develop and those came on between eight and twelve months after treatment and consequently I was certain that they were due to the natural progress of the disease rather than to irradiation. It has been my observation that cancer of the cervix is being seen in younger women, and a larger percentage of cases in the past five years has occurred between the ages of 30 to 40. It is important, therefore, to suspect malignancy at this period of life and carefully examine the patients so that early growths will not be overlooked.

DR. JAMES E. DAVIS, Detroit: With regard to the early diagnosis of cancer of the cervix, it probably would be of great advantage if physicians were obliged to take about thirty or thirty-five minutes to examine a cervix suspected of carcinoma. Further, I think the safety of the patient would be advanced about 15 per cent if cancer structurally grew with a number of thorns around the peripheral surface. I say that because then the cancer would be handled gently. In the practical examination of the cervix I believe great aid can be secured if one will divide the cervix into two planes (I am speaking now of the cervix in the early stage of cancer growth): one plane to include that part of the cervix which one is reasonably sure is not involved in the cancer process, and the other plane to include the parts suspected. One's examination might begin with a careful survey of the surface that is covered by the stratified epithelium, and if one has not tried this practice of examining critically and slowly the stratified epithelial surface, one will be surprised how much one will learn by taking adequate time and using one's eyes critically in the examination. Secondly, one might aid the ocular examination by using some simple tissue stain and observing the deeper intensity of the stain in the carcinomatous tissue if there is any present. Further, the division of carcinoma into two groups only would simplify our understanding. One might be called the adenocarcinoma, which is the smaller group, perhaps not making up a higher percentage than 6; the other group is the epidermoid type of carcinoma. That would simplify many of the problems of the pathologist and I think some of the problems of the clinician. In regard to the obtaining of biopsy material, if a sharp knife is used and one keeps on cautioning oneself about avoiding unnecessary manipulation of the cervix, one can take a biopsy section, I am quite sure, without scarcely any danger to the patient. The manipulation of the cervix is an exceedingly dangerous procedure.

ENDEMIC EDEMA

JOHN B. YOUMANS, M.D.
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Nutritional edema may occur in epidemics in populations whose diet is inadequate for a time, as happened in the Central Powers during the World War.[1] It may exist in endemic form in populations whose diet is always more or less inadequate, as in China.[2] It also appears sporadically, most often because of some disease which interferes with the proper intake or absorption and utilization of food.[3] Since the World War it has been shown conclusively that the disease is associated with a hypoproteinemia, presumably due to an insufficient intake or utilization of protein.[4] A similar edema, with an accompanying hypoproteinemia, has been reproduced experimentally in animals by feeding a diet low in protein.[5] Recently other studies have emphasized the important relationship between the plasma proteins and certain forms of edema.[6]

In this country studies of nutritional edema have dealt with sporadic cases, and the existence of endemic nutritional edema has scarcely been suspected. For several years, however, cases of edema have been observed at the Vanderbilt University Hospital which are apparently nutritional in origin.[7] Except for incidental and unrelated conditions, they are not accompanied by other disease. Most of the cases have occurred

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2. Meleney, Henry E.: Personal communication to the author.
3. Peters, J. P.; Wakeman, A. M., and Eisenmann, A. J.: The Plasma Proteins in Relation to Blood Hydration: III. The Plasma Proteins in Malnutrition, J. Clin. Investigation **3**: 491, 1927. Bruckman, F. S.; D'Esopo, L. M., and Peters, J. P.: The Plasma Proteins in Relation to Blood Hydration: IV. Malnutrition and the Serum Proteins, ibid. **8**: 577, 1930. Landis, E. M., and Leopold, S. S.: Inanition Edema Associated with Tuberculous Enteritis, J. A. M. A. **94**: 1378 (May 3) 1930.
4. Schittenhelm (footnote 1). Peters et al. (footnote 3). Bruckman et al. (footnote 3). Landis and Leopold (footnote 3). Weech, A. A., and Ling, S. M.: Nutritional Edema: Observations on the Relation of the Serum Proteins to the Occurrence of Edema and to the Effect of Certain Inorganic Salts, J. Clin. Investigation **10**: 869, 1931.
5. Frisch, R. A.; Mendel, L. B., and Peters, J. P.: The Production of Edema and Serum Protein Deficiency in White Rats by Low Protein Diet, J. Biol. Chem. **84**: 167, 1929.
6. Leiter, L.: Experimental Nephrotic Edema, Arch. Int. Med. **48**: 1 (July) 1931. Barker, M. H., and Kirk, E. J.: Experimental Edema (Nephrosis) in Dogs in Relation to Edema of Renal Origin in Patients, Arch. Int. Med. **45**: 319 (March) 1930.
7. Youmans, John B.; Bell, Austin; Donley, Dorothy, and Frank, Helen: Endemic Nutritional Edema. I. Clinical Findings and Dietary Studies; II. Serum Proteins and Nitrogen Balance, to be published.

in the spring and early summer. In late summer new cases fail to appear and the others tend to lose their edema. Occasional cases are seen during the fall and winter. The edema is from slight to moderate in the majority, involving the feet and legs most often, but sometimes the face and hands as well. Some of the patients have complained of mild pain and tenderness in the extremities. Most of the patients are women and all ages are included. The duration of the edema has varied from a few days to years, the edema occurring intermittently in the latter group. Only about one half of the patients have been underweight and a few have been obese. In nearly all, however, a loss of weight preceded the onset of edema. The absence of other causes and the number of cases suggested that this edema was nutritional in origin although there was no unusual cause for undernutrition and at the time the first cases were detected the economic situation was generally satisfactory. It was known, however, that the customary diet of a large part of the population in this part of Tennessee was such that the protein content might be low. Preliminary studies showed the total serum protein to be normal or higher than normal. Later, studies of the protein fractions showed that though the total was usually normal there was a slight to moderate reduction in the serum albumin, the normal total being due to a high normal, or abnormally high, globulin. So far, more than fifty of these cases have been observed and a number have been studied in some detail. The investigation has included, among

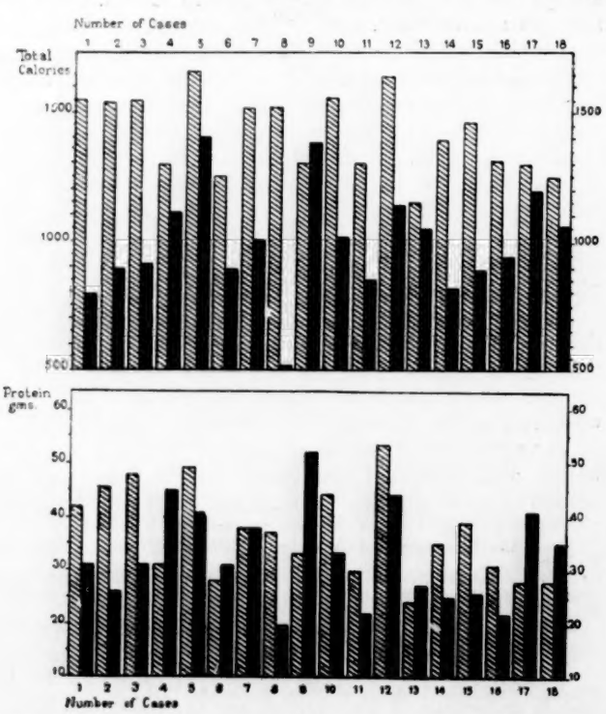

Chart 1.—The average total calory and protein intake per day of eighteen patients with nutritional edema. In each instance the calculated basal caloric requirement and minimal protein requirement (0.6 Gm. per kilogram) are presented for comparison. The solid columns represent the actual intake and the shaded columns the calculated requirements, each pair of columns representing a single case.

other things, an investigation of the diet, determinations of the serum proteins and studies of nitrogen balance. A number of the patients have been followed over periods of weeks to years and the course of the disease under various conditions has been observed. All but two of the patients have been studied exclusively in the outpatient department.

DIET

A study of the diet was made by having the patient keep an accurate record of the food eaten for a number of days. Printed slips were provided on which the amounts and kind of food taken each day were recorded and from which the average daily intake of protein, animal protein, carbohydrate, fat and total calories was

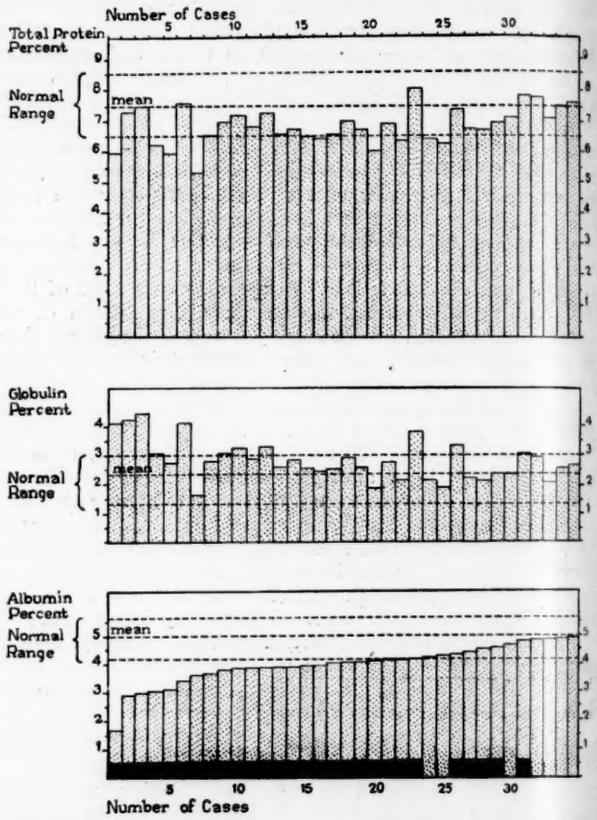

Chart 2.—The initial determination of the serum proteins in thirty-five cases of nutritional edema, arranged in ascending order of the values for serum albumin. Each column represents an individual case. The shading in the bottom columns indicates the presence of edema. In the nonedematous subjects edema had been present before the serum proteins were determined.

calculated. The procedure was carefully explained to the patient, not only by the physician but by a social worker who sometimes visited the patient at home to assist in keeping the record and check its accuracy. Part of the data from eighteen cases are shown graphically in chart 1. In every instance but one the caloric value of the diet was below the calculated basal requirements. Since all were outpatients and more or less active, the actual deficiency was much greater. The average daily intake of protein was low, ranging from 20 to 52 Gm. daily and in twelve was at or below the usually accepted minimum (0.6 Gm. per kilogram). In the others it was below 1 Gm. per kilogram. Although the records are believed to be fairly accurate, the total number of calories was probably somewhat greater than is recorded. Considerable amounts of fat were used in cooking, and have not been taken into account. The daily records showed considerable variation, and had the study been made over a longer period it is probable that a higher average would have been found. The study was made when the edema was present, and the diet may have been unusually poor at that time. No allowance has been made for the availability and character of the protein or for the possible loss of protein in the stool, which may have been

greater than usual. It must also be remembered that a minimum protein intake is sufficient only when the calories are abundant. In general, it appears that the diet of this group was characterized by a caloric intake which was always near, and frequently dipped below, the bare maintenance level and by a minimum amount or less of protein. It is probable that the deficiency had existed for a long time in most instances, perhaps for a greater part of the patients' lives. There is reason to believe also that the character of the diet was not due solely to economic causes, but was partly the result of custom and habit.

SERUM PROTEINS

The initial serum protein values [8] in thirty-five cases are shown in chart 2. In most instances the total protein is within the normal range. Values below the lower limit of normal are found in only nine, but in twenty-three the total protein is below the average normal. The albumin protein shows more significant changes. The individual values range from 1.72 to 4.97 per cent, with an average of 4.00 per cent, which is distinctly below the normal lower limit. More significantly, the individual values are at or below the lower limit of normal in twenty-two of the thirty-five. In contrast to the albumin, the globulin is above the normal average in all but eight cases, and in eleven is above the upper limit of normal. The globulin is not below the lower limit of normal in a single case. Thus, the high globulin accounts for the normal total protein. The inclusion of cases without edema is explained by the fact that in some instances the examinations were not made until after the edema had disappeared. The

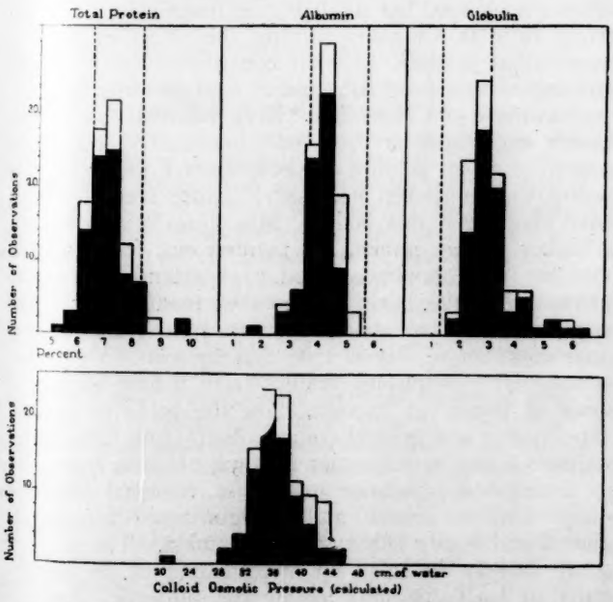

Chart 3.—The relation of the serum proteins and of the calculated colloid osmotic pressures of the serum to the edema. The osmotic pressures have been calculated by the use of Govaerts' factors (Bull. Acad. roy. de méd. de Belgique **7**: 356, 1927). The black areas indicate the presence of edema. The broken lines indicate the "normal" range.

presence of edema with a normal albumin may be due in part to a lag in the disappearance of the edema, and in most of these instances the edema was absent a short time later.

8. The serum proteins were determined by the use of Howe's method for fractioning the proteins (J. Biol. Chem. **49**: 93, 1921) and the macro-Kjeldahl procedure. A more complete description will be published later. The standards of normal that were adopted are: average values, total protein 7.30 per cent; albumin, 5 per cent, and globulin, 2.3 per cent; normal range, total protein from 6.5 to 8.5 per cent, albumin from 4.2 to 5.7 per cent and globulin from 1.3 to 3.0 per cent.

In the patients who were followed a sufficient length of time the edema tended to disappear when the protein in the diet was increased and as the serum albumin rose. This relationship was obscured, however, by the lag in the disappearance of the edema, the inability to control accurately the diet and activities of the patients and the irregular intervals between observations. Furthermore, there were spontaneous fluctuations in the edema which could not be related to any known cause. It is interesting that a considerable period of time was necessary before the serum proteins returned to normal. This was not due entirely to a failure to take the diet recommended, as shown by the fact that one of the patients was treated in the hospital with a high protein diet for ten days with little effect on the serum albumin, which did not reach its maximum until some weeks after the patient was discharged, though the same diet was continued. It is possible, since the albumin continued to rise, that nitrogen retention persisted during this period, though neither the present studies nor those of others had been continued sufficiently long to demonstrate this. The observations suggest that in nutritional edema the depleted nitrogen stores of the body are replenished before the blood proteins are greatly increased or that some difficulty exists in the absorption or utilization of protein.

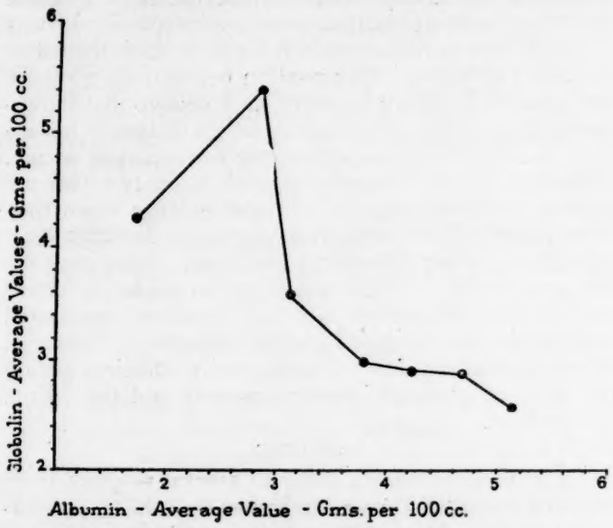

Chart 4.—In this figure the average values for each group of albumin determinations at 0.5 per cent intervals (1.50-1.99, 2.00-2.49, etc.) have been determined and the average values for the corresponding globulin determinations plotted against them. The first point represents a single determination only. The tendency for the globulin to fall as the albumin values rise is evident.

In attempting to correlate the changes in the serum protein with the presence or absence of the edema the data obtained by repeated examinations of some of the patients were combined with the results of the initial determinations. One hundred determinations were available for this purpose (chart 3). No correlation was found between the total protein, which was usually normal, and the presence or degree of edema. There was some apparent relation between the lowered albumin and the presence of edema, but for reasons to be discussed it is not very close. There was a tendency toward an opposite relationship in the case of globulin, and high values for globulin were often found associated with edema. It is interesting to compare these observations with the correlation between edema and the total colloid osmotic pressure. Since albumin has an osmotic pressure approximately four times that of globulin, it is to be expected that a decrease in the

former would cause a significant drop in colloid osmotic pressure in spite of a normal or increased globulin. Correlation is not greatly improved, however, probably because of the same factors that are active in the case of the albumin.

An increase in the serum globulin occurred too often and was too great to be considered merely coincidental. Neither is there any evidence that the high globulin was the result of such factors as infection. It was observed that as the albumin fell the globulin tended to rise and vice versa. This relation between the globulin and albumin is shown in chart 4. I believe that it represents a compensatory reaction, which is usually incomplete and insufficient to prevent the formation of edema.

Studies of the nitrogen metabolism in two patients showed a slightly negative nitrogen balance when they were placed in bed and given the same diet that they were taking when the edema developed. Increasing the nitrogen intake resulted in a slight to moderate retention of nitrogen, which was not, however, associated with a prompt increase in serum albumin. However, in one case which was followed over a sufficient period the albumin gradually rose to normal and the edema disappeared.

COMMENT

These cases of edema differ in several respects from cases of nutritional edema reported by others, particularly those seen during epidemics. In general, the disease is milder and the patients are less severely undernourished. The symptoms of severe undernutrition, bradycardia, hypotension, subnormal temperature, lowered metabolic rate, etc., are lacking. The absence of any disease causing the malnutrition distinguishes them from most of the sporadic cases. The changes in the serum protein are consistent with the mild nature of the symptoms. Greater reductions in the serum proteins have been reported by other writers. In some instances variations in the methods are responsible for the difference. Much more important is the difference in the severity of the disease and the circumstances under which the present studies were made. A lowered osmotic pressure due to lessened serum proteins is but one of the two principal factors at present thought to be concerned in this form of edema and determines only a tendency to edema. The other factor is capillary pressure, and the occurrence of edema probably depends primarily on the balance of force between the capillary pressure tending to push fluid out of the vessels and the osmotic pressure tending to hold it in. An increase in capillary pressure can cause a filtration of water from the blood in the presence of normal amounts of protein. Krogh, Landis and Turner[9] have recently shown that the erect human being is always near edema. Therefore, even a slight reduction in serum protein might result in the formation of edema, provided the capillary pressure remained unchanged, and edema would be more apt to occur if the capillary pressure were increased. All the patients studied were ambulatory patients, more or less engaged in their usual activities, and it might be expected, therefore, that edema would occur at higher concentrations of serum protein than in patients who were confined to the hospital and whose activities were greatly restricted. The influence of the restriction of physical activity is well shown by the two patients who were hospitalized and who quickly lost 4 and 2 Kg., respectively, with little or no change in the diet.

The lack of closer correspondence between the changes in the serum albumin and the occurrence of edema is possibly the result of several factors, among which are the influence of physical activity, the lag in the appearance or disappearance of the edema, uncontrolled variations in salt and water intake, the intermittent and chronic nature of the disease, variations in the serum globulin and the irregularity and infrequency of the observations in the cases in which repeated observations were made. Nevertheless it is possible that other factors, as yet unknown, may be concerned with the development of edema in these patients.

These cases have an importance out of all proportion to the mildness of the symptoms. They represent, I believe, the effect of a dietary inadequacy of slight degree but long duration. In the past, interest has been focused on relatively acute and well developed cases of deficiency disease in which there exist gross inadequacies. At present attention is being directed to milder and more chronic disorders; to the effect of minimum or suboptimum conditions of diet, rather than severe deficiencies. Disease which is the result of gross inadequacy may be of greater individual importance, but, on the other hand, is more easily and earlier detected and remedied. Less serious errors in diet, with their greater frequency and more subtle effect on a population, are of vastly greater general importance. In the present cases the edema itself probably has little harmful effect on the patient. If, as seems likely, the principal dietary inadequacy in these cases is a lack of protein, the edema is important only so far as it indicates a prolonged but mild protein insufficiency. Relatively little is known regarding the effect of such a deprivation in man or what constitutes the optimum amount of this food substance. Certain older studies, such as those of Chittenden,[10] have indicated that bodily health and vigor are not only maintained but even improved on an amount of protein much lower than is ordinarily considered necessary. More recent studies have challenged this belief. McCollum,[11] who favors a higher protein intake, has pointed out, for example, that the nine months' period of Chittenden's experiments represents but 1 per cent of man's normal life span, a period too short to warrant far-reaching and final conclusions. It is true that in man no clearcut symptoms or syndrome results from a long-continued minimal intake of protein. On the basis of animal experiments and general clinical observation it has been suggested that a minimum amount of protein results in diminished resistance to disease, lessened fertility, early senility, anemia and a significant decrease in mental and bodily efficiency and stamina. The present study has not included an investigation of the occurrence of such disorders among the subjects. Neither can great significance be attached to general clinical observations. Nevertheless it seems fair to state that experience among the population from which these patients are drawn has indicated a high incidence of many of the conditions listed. One is also led to the consideration of a possible relation between the dietary insufficiency and certain social and economic characteristics of the same population. For the present, however, these observations are, at most, only suggestive. It is realized that the diets that have been recorded

9. Krogh, A.; Landis, E. M., and Turner, A. H.: The Movement of Fluid Through the Human Capillary Wall in Relation to the Venous Pressure and to the Colloid Osmotic Pressure of the Blood, J. Clin. Investigation **11**: 63, 1932.

10. Chittenden, R. H.: The Nutrition of Man, New York, Frederick A. Stokes Company, 1907.

11. McCollum, E. V., and Simmonds, N.: The Newer Knowledge of Nutrition, ed. 4, New York, the Macmillan Company, 1929.

may be inadequate in other respects than protein. They are known to be at least close to the bare maintenance level in total calories. Pellagra occurs among this same group of patients. In spite of a considerable intake of leafy vegetables there is reason to believe that this diet may be lacking in the important vitamin B. Many of the disease conditions which might be ascribed to a lack of protein are also attributed to a lack of other specific food substances. It is difficult under clinical conditions to study the results of an inadequacy of single food constituents; multiple deficiencies nearly always exist. It is likewise difficult to understand why with closely similar diets some patients will develop pellagra, others anemia and still others a nutritional edema. Yet the occurrence of such an edema, with changes in the serum proteins in persons whose diets contain a minimum of protein or less cannot but suggest the importance of protein in the diet and a possible relation between a deficiency of protein and other abnormal conditions encountered in these patients.

SUMMARY

Cases of edema, apparently nutritional in origin and endemic in nature, have been observed in this clinic. The usual diets of the patients have been found to be low or minimal in total calories and in proteins. Studies of the serum proteins have shown the total protein usually within the limits of normal, the serum albumin slightly to moderately reduced and the globulin normal or increased. The edema has shown an irregular tendency to disappear as the protein intake is increased and as the serum albumin rises. The significance of these observations is discussed

ABSTRACT OF DISCUSSION

DR. ROY H. TURNER, New Orleans: There is a great contrast between the presence of slight edema in Dr. Youmans' cases, with an almost normal serum protein concentration, as compared with some of the patients one sees with pellagra who have an extreme diminution in serum proteins and also have little or no edema. The tendency to edema in pellagra usually is extremely slight, whereas the tendency to edema in spite of almost normal serum proteins is marked in the patients described by Dr. Youmans. It is easy to guess at some of the causes, but one can't be sure of the explanation. Certainly, pellagrins lying in bed, and they tend to lie quietly indeed, do not have the high capillary pressure, very likely, that exists in the dependent portions of the erect body. They also suffer from diarrhea, which offers a ready means for the escape of fluids and salts from the body. The two groups certainly illustrate the necessity for common sense explanation coupled with accurate observation in the interpretation of laboratory data. It is fascinating to speculate whether beriberi in a mild form plays a part in this condition. Dr. Youmans intimated that it might, but I should like to have him make a more definite statement in that direction. It seems that it is not yet known why edema is present in the wet form of beriberi. When attention was recently centered on lower protein concentration of blood serum, many people assumed that this was the cause of the edema in wet beriberi. So far no one has reported the proper observations; recently, however, I have had personal communication that such observations have been made in China, and there is not a diminution in the concentration of protein there. Whether there is another vitamin having to do with edema that is independent of the antineuritic factor is not generally believed, and yet there are those who do not believe that heart failure is the cause. I think Dr. Youmans has stated that antineuritic vitamin has not been effective in these cases. I should like to know more definitely about that.

DR. JOHN B. YOUMANS, Nashville, Tenn.: A number of these patients were digitalized on the supposition that they were cases of mild cardiac failure, but most of them continued to get more edematous. I should like to emphasize that additional factors are involved in the edema. The principal factors concerned are supposed to be the lowering of the serum proteins and the capillary pressure, one balanced against the other, but salt and water intake, for example, are extremely important. A patient is now being treated whose edema can be increased or decreased at will by giving or withholding salt and water. I know of no final means of proving that these are not cases of mild beriberi. The only thing to suggest beriberi has been the edema, and the slight pain and tenderness in the extremities. It is curious that among so many mild cases there should be no clear-cut cases of beriberi, if this condition is beriberi. None of the patients have shown definite peripheral nerve changes. I have tried vitamin B in the form of brewers' yeast and have not been able to satisfy myself as yet that it has any definite effect on the disease.

ULTIMATE RESULTS FROM OPERATIONS ON THE BILIARY TRACT

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The true criterion for judging the merit of various types of operations for benign lesions, aside from consideration of immediate operative risk, resides in an accurate appreciation of the ultimate benefit to the patient. Unfortunately a true evaluation of end-results over a long period of time is always difficult; questionnaires are frequently unsatisfactory and personal interviews often impossible. The data presented here were culled from replies to a questionnaire sent to all patients operated on at the Mayo Clinic for benign disease of the biliary tract in the years from 1907 to 1910, inclusive. Many of the letters were discarded because they were vague or indefinite, and the information could not be accurately classified. An effort was made to arrange the available material in a manner suitable for judging ultimate prognosis and evaluating current operative procedures.

From 1,652 questionnaires, 606 satisfactory replies were received, either from the home physician or, in most instances, from the patients themselves. Sixty-four of the patients had died recently, but full information concerning their condition was obtainable. Of the entire group of 1,652 patients, 312 are known to be dead. From the point of view of diagnosis, complete data were obtained concerning 534 patients with cholelithiasis and 72 patients with cholecystitis without stones. From a surgical point of view, information was obtained concerning 426 patients following cholecystostomy, 121, following cholecystectomy and 59 subsequent to some type of operation on the common bile duct. An additional group of 53 patients originally operated on at the clinic between 1907 and 1910 and who returned to the clinic for further operation of the biliary tract will be considered separately, since late follow-up data were not obtained concerning all of them. However, the nature of the secondary operation and lesions encountered supplements our information concerning the first group, some of whom had subsequent operations performed elsewhere.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

During the twenty-two years or more that have elapsed since these patients were operated on, the trend of surgery has kept abreast with growing knowledge of the physiology of the liver and biliary tract with the result that operative procedures have been somewhat altered and improved. The ultimate physiochemical basis for the cellular functions of the liver and its associated system of ducts both in health and in disease remains an enigma that must be solved before a thorough understanding and true appreciation of hepatic and biliary disease can exist. When this information is available, present-day surgical procedures may be greatly altered.

PREOPERATIVE DATA

During the earlier years only a relatively few patients (13.3 per cent) were subjected to operations on the biliary tract unless gallstones were present. It is now realized that in many cases the patient derives considerable benefit from removal of an infected gallbladder or drainage of the common bile duct for the treatment of cholangeitis whether or not stones are present at the time of operation. Many diseases of the gallbladder are now recognized sufficiently early to permit surgical treatment prior to the inevitable formation of calculi. As has been shown repeatedly, most patients with cholecystic disease are women; 80 per cent of those with cholelithiasis and 70 per cent of those with cholecystitis without stones were women. The difference is possibly accounted for by the cases of metabolic cholecystitis in which stone is so prone to form, and which are far more common among women than among men. The proportion of unmarried women is equally small in both groups (5 per cent). The average age for all patients was 42 years. The symptoms were much the same as are now observed, with the possible exception that they were usually more marked before surgical treatment was instituted.

TABLE 1.—*Cholecystitis with Cholelithiasis; Results More Than Twenty Years After Operation (534 Cases)*

Operation	Cases	Per Cent		
		Satisfactory	Unsatisfactory	Reoperation
Cholecystostomy	376	58.6	24.4	17.0
Cholecystectomy	100	83.0	17.0	0
Choledochostomy and cholecystostomy	43	76.8	16.3	6.9
Choledochostomy with or without cholecystectomy	15	86.6	13.4	0

TABLE 2.—*Cholecystitis Without Cholelithiasis; Results More Than Twenty Years After Operation (72 Cases)*

Operation	Cases	Per Cent		
		Satisfactory	Unsatisfactory	Reoperation
Cholecystostomy	50	62.0	26.0	12.0
Cholecystectomy	21	85.7	14.3	0
Cholecystostomy and choledochostomy	1	100.0	0	0

GENERAL RESULTS

Recurrence.—In general, cholecystectomy afforded results distinctly superior to those afforded by cholecystostomy. This was equally true regardless of the presence or absence of stones. Tables 1 and 2 illustrate the number of cases and the general results for the entire series of cases of cholelithiasis and of cholecystitis without stones. Good results were obtained following cholecystostomy in 60 per cent of cases, and following cholecystectomy in about 84 per cent. In none of these cases was a secondary operation required. A few patients had a recurrence of colic after the gallbladder had been removed. This was suggestive of disease of the gallbladder, but in no case was the condition sufficient to warrant operative treatment. During recent years we have encountered a definite group of cases in which, after a variable length of time following cholecystectomy, there is a typical clinical picture of stone in the common bile duct, except that jaundice is slight or more commonly absent. At exploration stones are not discovered and the underlying pathologic change appears obscure; however, symptomatic relief is complete following prolonged drainage of the common bile duct with a T-tube.

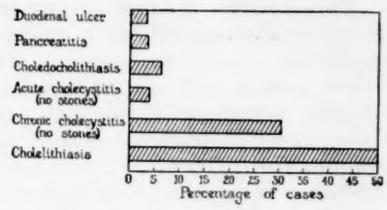

Chart 1.—The type of lesion encountered in fifty-three cases in which a secondary operation was required following an initial cholecystostomy. A preponderance of cases of cholelithiasis may be noted.

After an initial cholecystostomy for stones, there was a very definite group of cases (17 per cent) in which a recurrence of the trouble necessitated another operation on the gallbladder. The group in which symptomatic relief was incomplete was larger in cases in which the gallbladder was drained than in those in which it was removed. If the common bile duct is opened, in addition to some type of operation on the gallbladder, the percentage of satisfactory results seems to depend largely on whether the gallbladder is drained or removed. There is a greater possibility of later recurrence of stones in the common bile duct if cholecystostomy rather than cholecystectomy is performed at the original operation. This is in accord with the hypothesis that the majority of gallstones unquestionably develop within the gallbladder with the exception of the stones of pure pigment or calcium bilirubinate, which apparently form in the ducts themselves. Relatively speaking, this is an uncommon type of stone, and if all calculi are removed from the common bile and hepatic ducts at the first operation and cholecystectomy is performed at the same time, recurrence of stones in the common bile duct is extremely rare. Recurrent choledocholithiasis was not encountered in any of these cases following choledochostomy and cholecystectomy. Following choledochostomy and cholecystostomy there was recurrence in 6.9 per cent of cases which necessitated further operation because of the condition of the gallbladder or common bile duct. It seems reasonable to assume that the presence of a diseased gallbladder would predispose to the occurrence

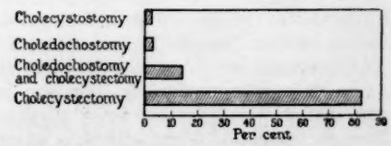

Chart 2.—Type of operation performed in the fifty-three cases in which a secondary operation was required following initial cholecystostomy.

of choledocholithiasis since it is in this portion of the biliary system that most gallstones originate. In contrast, if cholecystectomy is performed initially, a potential focus for the formation of calculus is at once eliminated. One could hardly say that inadequate drainage of the common bile duct is responsible for the recurrence when cholecystostomy has been performed, as similar trouble did not develop if the gallbladder was removed at the initial operation when the common bile duct was opened.

Pathology.—The pathologic changes in cases in which recurrence following cholecystostomy definitely occurred varied, but for the most part were characterized by reformation of calculi in the gallbladder; this occurred in about 50 per cent of such cases. In a somewhat smaller group cholecystitis, chronic or acute, existed unassociated with stones. Less frequently choledocholithiasis, pancreatitis and duodenal ulcer were observed. As we have stated, when cholecystectomy was performed reoperation was not required in this series of cases. If a diseased gallbladder is merely drained and not removed, a potent focus of infection is permitted to remain. Chart 1 illustrates the relative frequency of the various types of lesions found in cases in which a secondary operation at the Mayo Clinic followed the original cholecystostomy between 1907 and 1910. The predominant lesion in these cases was cholelithiasis, and cholecystectomy was performed subsequently in most cases (83 per cent) (chart 2). In a

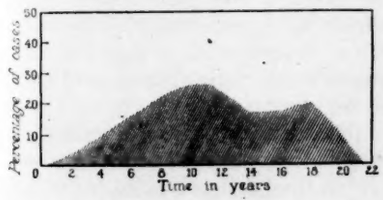

Chart 3. The interval elapsing between the initial cholecystostomy and the secondary operation in 100 cases in which a recurrence of symptoms necessitated a second operation.

smaller group it was necessary to perform choledochostomy, either with or without some operation on the gallbladder.

In 7 cases of choledocholithiasis requiring subsequent surgical treatment there was none in which cholecystectomy accompanied the original operation on the common bile duct. Only 4 of the patients required secondary choledochotomy; the remaining 3 were subjected to operation because of cholecystic disease unassociated with a lesion of the ducts. Had the gallbladder been removed primarily in these 7 cases, the possibility of permanent relief would have been greatly enhanced. In some cases, however, primary cholecystectomy performed at the time of choledochostomy is inadvisable. This may be true either because of jaundice in the presence of which one hesitates to remove the gallbladder and leave an oozing hepatic surface, or because of the possibility of utilizing the gallbladder in the future in maintaining free drainage of bile into the intestinal tract.

The interval elapsing between the first and second operations in the cases in which there was a recurrence varied considerably. Although frequently symptoms that later demanded surgical attention appeared within a few years after the initial operation, they were often absent much longer, a decade or more in some cases. Chart 3 illustrates the length of time between the two operations in a group of 100 cases of recurrence. The interim in about half our cases was more than ten years, which emphasizes the importance of a long period of observation if true end-results are to be ascertained. This, of course, does not mean that the recurrence of symptoms was necessarily delayed for so long an interval. At times this is of significance in observing the effects of an operation for choledo-

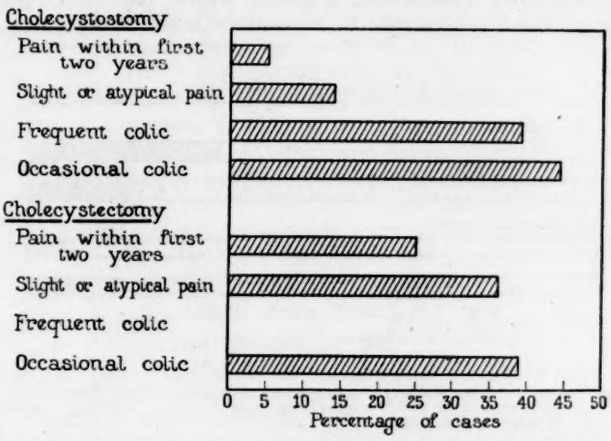

Chart 4.—Type of pain after cholecystostomy and after cholecystectomy. Thirty-nine per cent of the patients had some abdominal pain following cholecystostomy, whereas only 17 per cent experienced discomfort after cholecystectomy.

cholithiasis. If jaundice or pain or chills and fever recur immediately following operation, it is probable that all the stones were not removed, whereas if there is a temporary relief of trouble and then recurrence, stricture of the common bile duct is more likely. Likewise, following cholecystectomy, if jaundice develops soon, one thinks first of an injury to the common bile duct at the time when the gallbladder was removed, whereas if there is a longer period of good health before further symptoms develop, choledocholithiasis becomes more probable.

Postoperative Pain.—A definite number of patients experience pain in the upper part of the abdomen following an operation on the gallbladder, but this is not always indicative of further trouble in the biliary tract. In our cases it was far more common and more often

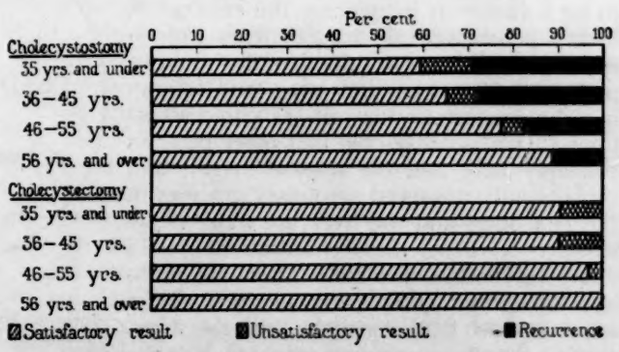

Chart 5.—The relationship between the age of the patient at the time of operation and the result obtained following cholecystostomy and cholecystectomy. A higher percentage of good results is reported by the older patients.

related to the biliary tract following cholecystostomy than following cholecystectomy. Following drainage of the gallbladder, 38.1 per cent of the patients had some pain. If the gallbladder was removed, only 17.3 per cent complained of further pain. Subsequent to surgical drainage of the gallbladder 80 per cent of the patients experiencing pain had what was considered to

be typical gallbladder colic. A number of them had pain only infrequently, and with proper medical care at home avoided further operative procedures. The remainder had severe colic frequently, and constitutes the group, for the most part, for whom additional operation became necessary. The 20 per cent of patients who had some postoperative pain but not typical colic constituted a group whose pain did not seem directly referable to the biliary tract, except in a

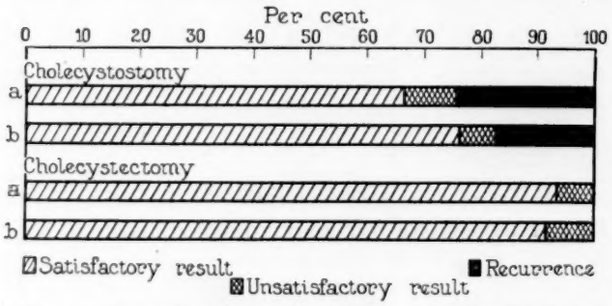

Chart 6.—The relationship between the preoperative symptoms and the end-result following cholecystostomy and cholecystectomy. The line *a* indicates symptomless or dyspepsia; the line *b*, colic, jaundice, chills, fever or some combination.

few instances in which it occurred soon after operation and then subsided completely. Following cholecystectomy (chart 4) only 17 per cent of the patients had any pain in the upper part of the abdomen, and this was usually not accounted for by recurrent biliary lesions. Only a third of this number had any typical colic. None had frequent severe colic. Pain within the first two years was relatively more common than following cholecystostomy, which might possibly be accounted for by the dilatation of the ducts known to occur following removal of the gallbladder. Comparatively more patients had slight or atypical pain following cholecystectomy. These results are what might be expected, as when the disease focus is completely removed, recurrence is far less common, and the point of origin for initiation of painful sensations is absent, for the most part, whereas following drainage alone there is a constant possibility of further trouble.

Factors Influencing Results.—Age seems to be a factor in influencing the results. A higher percentage of older patients experienced good ultimate results than the younger patients (chart 5). This was true following cholecystectomy as well as cholecystostomy. If it is considered that older patients probably have had the disease longer, and consequently advanced secondary changes in the bile ducts and the liver are more likely to have occurred, these observations would appear difficult to explain. There are probably other factors at work, and it does not seem necessary to conclude that the duration of the disease is proportionate with the age of the patient. Whether the appendix was removed at the original operation made no difference in the end-result. From this point of view the appendix cannot be considered a focus for disease of the upper part of the digestive and biliary tracts, although this relationship has been mentioned often. This does not mean that it may not be advisable to remove the appendix in operating on the gallbladder, but it should be removed only with the thought of preventing future local trouble. The preoperative symptoms are not so significant in the final result as one might expect, provided, of course, the original clinical diagnosis is correct. Patients with colic, jaundice and chills and fever, or some combination of these complaints, prior to cholecystostomy are likely to obtain more complete symptomatic relief than patients who complain chiefly of dyspepsia. The difference is not great, however, and after cholecystectomy it is even slightly reversed (chart 6).

The presence or absence of stones at the original operation is of some prognostic significance, as patients without stones had less subsequent trouble than those with stones, particularly if cholecystostomy had been performed. If the gallbladder is removed, the results seem to bear practically no relationship to the existence or nonexistence of stones. The general condition of the patient, the extent and nature of the lesion encountered and the type of operation performed are of primary importance in evaluating the prognosis following operation on the biliary tract. Other factors may appear to play some part in the ultimate result, but they are mainly of secondary significance.

PRESENT STATE OF HEALTH OR CAUSES OF DEATH

In recent years considerable attention has been given to the gallbladder as a focus of infection. This has been emphasized to such a degree that not infrequently cholecystectomy is now performed with the sole purpose of favorably influencing healing of lesions elsewhere in the body. The gallbladder has been most often condemned as a perpetrator of chronic infectious arthritis. Some observers have noted a supposed relationship between cholecystic disease and cardiovascular disease. In the group of 385 patients who are still living, more than twenty years following operation on the biliary tract, hypertension, arthritis, cardiac disease and apoplexy in the order named were found to be the most common causes of ill health at the present time. The frequency of these complaints was far in excess of the general incidence of these maladies, as quoted by actuarial statistics. They were usually more common among patients who had cholecystostomy rather than cholecystectomy. Furthermore, there were more than twice as many (27 per cent as compared with 11 per cent) who now complain of poor health following cholecystostomy than following cholecystectomy (chart 7). The relation between disease of the gallbladder or biliary tract and diseases of the joints or cardiovascular system seems quite definite.

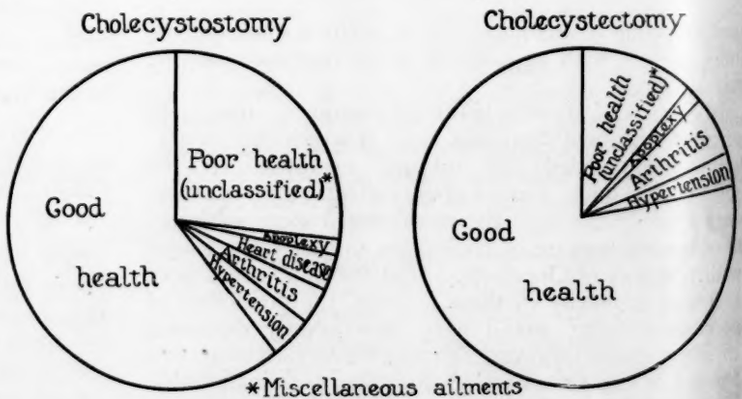

Chart 7.—The present state of health of 385 patients following cholecystostomy and following cholecystectomy. A much larger number of patients are in good health after removal of the gallbladder.

An analysis of the causes of death in 65 cases, in most of which cholecystostomy had been performed previously and the terminal illness was known, confirms the suggested association of biliary and cardiovascular disease (chart 8). Cardiac disease and apoplexy together accounted for more than 45 per cent of the deaths of these patients. Data obtained from a life insurance company give the incidence of these two causes of death as slightly less than 20 per cent among persons of similar ages. Subsequent disease of the biliary tract accounted for almost 5 per cent of the deaths in our cases and angina pectoris for about 3 per cent; the latter was practically identical with actuarial statistics. It might be suggested that if operation had been performed on the biliary tract years ago, disease would no longer exist in this portion of the body, and therefore deaths from cardiac and vascular disorders were not attributable to the influence of biliary disease. Lesions had existed in the biliary tract for some time before surgical treatment was employed, however, and unappreciated changes undoubtedly existed for years following operation, even in the absence of the gallbladder.

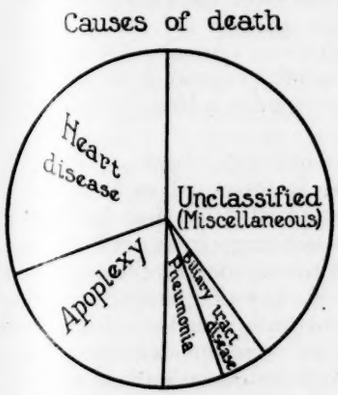

Chart 8.—The cause of death of 65 patients following operations on the biliary tract, all except 7 of which were cholecystostomies.

COMMENT

Although cholecystectomy is now generally preferred for primary disease of the gallbladder, certain surgeons still perform cholecystostomy in a considerable number of cases. Our data indicate that a greater percentage of good results followed the former operation. Ordinarily the gallbladder is removed except in the presence of certain definite contraindications. If the patient is an extremely poor surgical risk, as in the presence of jaundice or a small atrophic liver, if it is anticipated that the gallbladder will be needed because of disease of the common bile duct, and occasionally if there is too much infection surrounding the gallbladder, cholecystostomy will often be preferable to cholecystectomy. If cholecystectomy is properly performed the immediate risk is probably no greater than surgical drainage of the organ, except in the cases mentioned.

During 1931, cholecystectomy was performed at the Mayo Clinic in 579 cases for chronic cholecystitis with a mortality of 1.7 per cent. If it is necessary to open the common bile duct, we feel that primary closure is never advisable. A variable period of drainage with a T-tube, ranging from three or four weeks to a year or more, depending on the lesion encountered, has given satisfactory results. When this type of drainage is employed, complete control over the flow of bile is maintained, as it may be drained externally through the long arm of the tube to the outside, or the tube may be clamped off, thus forcing the bile down into the duodenum. If it is considered desirable, fluids may be administered through this tube. A postoperative stricture of the duct does not result from the use of the tube, nor is there any danger of a persistent biliary fistula, provided patency of the common bile duct is established at the time of the operation.

THE CONSERVATIVE TREATMENT OF CHOLECYSTITIS

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AND
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The past decade has given us a wealth of new knowledge concerning the functions of the liver, gallbladder and biliary ducts. Because of this added knowledge of the factors influencing these functions, the immediate hospital mortality of 6 per cent noted in the earlier groups of patients operated on for chronic cholecystitis has been reduced to less than 2 per cent in later groups. We now know that a diseased gallbladder is almost always accompanied by inflammatory changes in the liver and in the biliary ducts, with resulting damage to liver function.

The damaged liver functions best with a high glycogen reserve. Dextrose by mouth passes through the portal circulation and is quickly stored as hepatic glycogen. The excess reaches the general circulation and is stored as muscle glycogen, not readily available for vital functions because it is not so readily released. For this reason apparently, ingested dextrose is actually more efficient than intravenous dextrose in building up vital glycogen reserves. Also intravenous dextrose given rapidly in large doses frequently spills over into the urine; such excess is not stored within the body. Furthermore, patients with livers damaged by obstructive jaundice usually become much dehydrated. If dehydration has developed, it must be relieved before the liver can store glycogen effectively; and even after relief of dehydration the capacity for hepatic glycogen storage returns slowly.

The schematic drawing shows how sodium chloride corrects acidosis or alkalosis if the kidneys are functioning properly. In alkalosis the administration of sodium chloride results in a retention of the chloride and an excretion of the sodium. In acidosis the reverse is true. If ketosis exists, give dextrose with sodium chloride. If the kidneys are not functioning properly, stimulate kidney function by giving 15 per cent dextrose in distilled water before using sodium chloride (Ravdin).

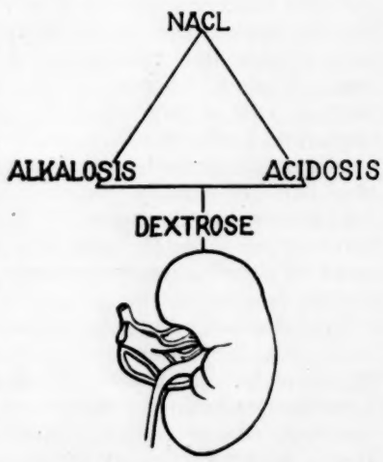
Mann has shown that animals with damaged livers are kept alive much longer on a carbohydrate than on a protein diet. Hence the patient having a damaged liver, or suspected of having such damage, should have a diet rich in carbohydrates and low in proteins. The low protein intake reduces the strain on the liver of having to exercise its detoxifying powers on the split protein products of digestion. We must realize that any change of mechanism, whether due to hepatic cell damage or to chemical activity, which depletes the liver of its glycogen reserve increases the operative risk. Patients with a normal blood chemistry will be found to stand operation with the least shock. These well known facts must be taken into consideration in the surgical and medical management of the disease.

It may seem untimely, with our recent advances in the knowledge of hepatic function, pathology and diagnosis, to advise conservatism in the surgical treatment of cholecystitis. We fear that occasionally surgical relief is advised because of refinements in the

From the Mason Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

interpretation of symptoms, together with newer methods of objective diagnosis of gallbladder disease, rather than because of the former clinical reasons for advising operation, i. e., prolonged and distressing clinical symptoms. We have found that in chronic disease of the gallbladder and biliary passages clinical symptoms may be entirely absent. If symptoms are present, they may, in a definite percentage of patients, be relieved by simple medical treatment.

Every surgeon occasionally sees advanced gallbladder disease at operation which was unsuspected clinically. Conversely, he is frequently uncertain whether or not the exposed gallbladder is actually diseased. Frequently small gallstones and gallbladder sand are overlooked in the tense gallbladder seen in the fasting patient at operation. Recently in our clinic we have given, as a routine procedure, a glycerin emulsion of egg yolk and lecithin with glycerin and alcohol by mouth one hour before anesthesia.[1] We have thus greatly facilitated surgical palpation of the gallbladder by having it partially empty, and much to our gratification, in these patients the small intestines are usually collapsed, resembling the condition that is seen following a spinal anesthesia. We believe this procedure is contraindicated in definitely diseased gallbladders, as two of our patients with advanced gallbladder disease had attacks of colic one-half hour after this emulsion was administered.



Schematic drawing showing how sodium chloride corrects acidosis or alkalosis if the kidneys are functioning properly. (After Ravdin.)

Several years ago Blackford and Dwyer reported that gallbladder disease was found twice as frequently as peptic ulcer and gastric cancer combined, and that it was the most common organic cause of dyspepsia. The autopsy observations of Stewart, Crump and Mentzer have shown that cholecystitis is present in as high as 60 per cent of people over 40 years of age, and that gallstones are present in approximately one out of every five. We have found clinically that the condition in only a little over 6 per cent of all patients above 20 years of age admitted to the clinic has been diagnosed as gallbladder disease and for only 20 per cent of those complaining of stomach trouble has this diagnosis been made. Yet these autopsy observations show that many times this percentage of cholecystopathies are found at routine autopsy. We have had occasion to study 600 histories of patients suffering from well defined chronic cholecystitis. There were approximately twice as many women as men in this series. The familiar saying that gallbladder disease usually occurs in women who are fair, fat and 40 has not been true in this series except in part. The average age of the patients when seeking relief was approximately 45 years.

1. This emulsion was suggested by Dr. Lester Levyn of Buffalo as an aid in roentgenology in his article, "An Effective Gallbladder Stimulant to Supplant the Fat Meal," Am. J. Roentgenol. **26**: 904 (Dec.) 1931.

Until very recently we have considered acute pain as a cardinal symptom of disease of the biliary tract. A few years ago we hesitated before arriving at a diagnosis of gallbladder disease without this as the chief symptom. In this series, localized pain or soreness of varying degrees was a common complaint, but only 18.5 per cent of the patients gave a history simulating that of one or more attacks of gallstone colic.

Approximately three fourths of the patients of this series sought relief on account of chronic gastric disturbances, and in over half of these the gastric symptoms had persisted for more than ten years. These disturbances consisted first of food selection, which was the most frequent complaint. The foods most commonly avoided were those that were rich and highly seasoned, fried meats, cooked cabbage and raw apples. The next most annoying complaint was of gas and a feeling of fulness in the epigastrium after meals.

The gastric analysis was recorded in 402 cases. In more than half of these patients it was found that free hydrochloric acid was absent from the gastric contents or was definitely below normal. In only 6.7 per cent was free hydrochloric acid above normal. We hesitate in the presence of a hyperacidity to make a diagnosis of cholecystitis on a patient presenting a history of chronic indigestion.

SURGICAL FOLLOW-UP STUDY

This group of patients is composed of those who had their gallbladders removed from five to fifteen years ago. They were suffering from well defined chronic cholecystitits, without complications. Thus those patients with acute cholecystitis, empyema, jaundice or carcinoma have not been included. Regarding the relief of symptoms of pain by cholecystectomy, 83 per cent considered that the operation had relieved 75 per cent or more of their previous complaint. Fifty-six per cent stated that they had been completely relieved of all their old symptoms. Thirteen per cent continued to have symptoms as before, and 4 per cent had no relief.

Dyspepsia brings more patients with disease of the gallbladder to the physician than any other complaint. Consequently the degree of relief of this condition is a fair index as to the benefit derived from removal of the gallbladder. In answer to the question regarding this condition, 73 per cent stated that their digestive disturbances were greatly relieved, 18 per cent partially improved, 7 per cent unchanged and 2 per cent worse.

Gas and belching have been stated to be the most common and most annoying complaint with most people with disease of the gallbladder. After operation these symptoms were either absent (37 per cent) or markedly relieved (46 per cent) in 83 per cent; no change was noted in 12 per cent, and 4 per cent stated that they considered themselves worse following the operation.

The continued absence of free hydrochloric acid in the gastric content is the cause of the failure of some patients to receive much relief of their digestive disturbances following cholecystectomy.

Food selection is another frequent complaint, as previously noted. In answer to the question as to whether or not the removal of the gallbladder permitted these patients to eat without distress certain foods that they could not eat before, 68 per cent replied in the affirmative. Many patients were very emphatic in their statements relative to this question, affirming that they could now enjoy many foods that would previously have caused them great distress. Thirty-two

per cent stated that they noticed no particular difference following the operation, and only 2 per cent felt that they were worse in regard to food selection than they had been previous to the removal of the gallbladder.

Colic, which is considered a common symptom of patients with disease of the biliary tract, occurred in 18 per cent of the patients before surgical and medical treatment had been instituted. We find that 17 per cent still reported colic after surgical treatment, but that most of these patients had only one or two attacks and these in the first year following their operation. Five years ago we were not draining the common and hepatic ducts nor investigating for stones as often as we are today. This may be the reason for this rather high percentage of patients having colic following their operation. The exact cause of gallbladder and duct colic not due to calculi has not yet been definitely established, as many of these gallbladders and ducts did not contain stones, only 45 per cent of the total series being found at operation to have stones.

MEDICAL FOLLOW-UP STUDY

The results in the patients who received surgical relief were most satisfactory. Yet we were impressed with the fact that there was a considerable series of patients with clinical cholecystitis who had been advised medical treatment or who had refused surgical treatment and hence were receiving medical treatment of some kind. Two hundred patients were selected for this study who had elected or had been advised medical treatment. We have been surprised at the infrequency with which delay has resulted in emergency operation or disaster. These 200 cases represent a 60 per cent successful follow-up of probable, typical and proved cases of gallbladder disease available for study after an average of nine and a half years. The average length of history was nine years, so the total average duration of history from the beginning of symptoms to the present is eighteen and one-half years. All available methods of follow-up study have been used; we have found it vastly more difficult to follow up medical than surgical cases. Diagnosis is assumed to be approximately 90 per cent correct, for these cases were studied by a group of careful clinicians, all usual methods of studying gastro-intestinal complaints being used, and cases with questionable diagnosis have been discarded. Most of these patients were studied before cholecystograms were available, but late in the series this method was used. Immediate operation was advised but refused in one third of these cases. A trial of medical treatment was advised in two-thirds, but it was always stated to the patient that operation was advisable later if relief was not obtained promptly by medical treatment.

Medical Treatment.—The patient with dyspepsia due to gallbladder disease has usually found, as mentioned previously, that certain rich and tasty foods disagree, that overloading the stomach brings on trouble and that high seasoning, fried foods and alcohol are often distressing. Naturally he tries to avoid the things that he knows make trouble. By medical management we mean the use of a diet list with general instructions and elimination of foods that usually disagree with such patients. We have advised periods of the use of morning saline, usually sodium phosphate; biliary salts before meals, lately combined with oleic acid; and relief of constipation. Alkalis have occasionally been used. Infective foci have usually been relieved, and we have laid emphasis on reasonable physical exercise. Medical biliary drainage (Lyons-Meltzer) has not been used for treatment.

Such a regimen has been instituted in all cases, but has been followed only as the patients cared to follow it. Treatment has not been supervised or followed closely.

The results of the medical study can be briefly stated. One third of these patients, under simple medical treatment, became symptom-free. One-third came to operation from three to five years after the diagnosis was made. One-third, because of the continuation of their symptoms, should have come to operation.

CONCLUSIONS

This study has confirmed our impression that in well defined chronic cholecystitis not relieved by medical treatment the operative results are most satisfactory. However, contrary to usual surgical advice, chronic cholecystitis may, in approximately one third of the patients, be successfully treated along medical lines. The risk of developing a surgical emergency or calamity while under medical treatment is not greater than is the risk in the best elective gallbladder surgery. Patients who have allowed their gallbladder symptoms to go on for a number of years until their gastric acids have become low or absent, with definite and permanent pathologic process of the liver and biliary ducts, cannot expect as complete relief from cholecystectomy as if they had accepted immediate operation. Hence we believe emphatically that when medical management fails to relieve promptly then operation should be urged on the patient. We wish to emphasize the fact that patients with acute cholecystitis, empyema, jaundice or carcinoma have not been included in this study.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JUDD AND PRIESTLEY AND DRS. MASON AND BLACKFORD

DR. R. L. PAYNE, Norfolk, Va.: I took the opportunity to go over my gallbladder cases through my follow-up methods, and some of the facts that I deduced have been worthy of comparison with those presented by the authors. I was amazed to find that the results after cholecystostomy in the early years were much worse than those reported by Drs. Judd and Priestley. Cases in which a second operation was performed were a great deal more frequent. Drs. Mason and Blackford presented a most interesting series of cases in which one third of the patients were relieved by medical treatment and two thirds by surgery. I have no medical series to compare with these, but I have a series of definitely proved cases of cholecystitis, proved at operation when cholecystostomy was done, that would indicate that 76 per cent of these cholecystostomy patients required second operations. In one series of fifty cases done between 1907 and 1913, by an accurately followed record, thirty-eight patients were reoperated on for trouble in the gallbladder or common ducts. In the early years, cholecystostomy was done almost as a routine and removal of the gallbladder was rarely done. In later years, in 545 cholecystectomies, 80 per cent of the patients have received satisfactory results. I was astounded to find that only 8 per cent of this series showed any common duct problems at the time of primary operation, and that, in 1 per cent of the 545 cholecystectomies, common duct complications developed after the gallbladder had been removed. In the last two years I have come to feel that if the operator does not believe that cholecystectomy can safely be performed in acute severe fulminating cholecystitis it would be to the best interests of the patient if the gallbladder was split open and destroyed by a strong chemical or the actual cautery, feeling that in the final analysis this would prevent a second operation. However, I have observed in many of these acute cases that in nearly every instance the process is well walled off from the rest of the abdomen, and I feel that if the enucleation of the gallbladder is carried out carefully and within the walled-off

area, cholecystectomy at that time is the best procedure, even though one might have to put a clamp on the cystic pedicle and be satisfied to leave it there and to pack the bleeding, oozing liver crater in order to finish and get out in a hurry. When one realizes that with all bad cholecystitis there is a complicating hepatitis, and remembers that we are told by Dr. Judd and others that this hepatitis has a definite tendency to repair after removal of the gallbladder, we must conclude, with Dr. Royster, that cholecystectomy is synonymous with surgical vision, for it is doing one operation to prevent another.

DR. FRANK H. LAHEY, Boston: I rise to make two particular points in connection with this paper: (1) to adduce some evidence to the effect that earlier operation will influence mortality and end-results in gallstones; (2) that common duct stones are much more frequent than they have heretofore been thought to be. Up to 1926 my associates and I had operated in 619 gallbladder cases; we had opened the common duct and searched for stones in 12 per cent of these cases. This netted a discovery of common duct stones of 8 per cent. That number of cases in 1931 has been brought up to 1,306. Last year we opened the common duct and searched for common duct stones in 41 per cent of the cases. That netted a discovery of common duct stones of 19 per cent. Previous to 1926 we undoubtedly left a stone in the common duct in approximately one in every ten cases in which operation was performed. The mortality in the cases up to 1926 was 5.4 per cent. The mortality in the group from 1926 to 1931 with an increased exploration of the common duct is 2.2 per cent. It does not increase the mortality in cholecystectomy, in gallstone operations, to open and explore the common duct; it decreases it. Of all the patients who had common duct stone operations, the mortality was 13.3 per cent. Therefore, two conclusions must be drawn. One is that long-standing gallstones increase the number of cases of common duct stone, and that when one waits to operate on these patients until they have common duct stones the mortality will be high. Our medical friends must overcome the complacency with which they permit patients to go through repeated attacks of gallstone colic. They must learn that if these patients are operated on while the stones are still in the gallbladder the mortality will be low and the end-results will be much improved. Thirty-nine per cent of all the patients in whom we found common duct stones did not have jaundice, and we must learn as surgeons that we do not want to wait until they have jaundice to make a diagnosis of common duct stones; we must learn that in the entire absence of signs of common duct stones, on only secondary indications, such as dilated ducts and thickened and contracted gallbladder, we must open common ducts and not depend on palpation alone. Common duct stones are overlooked at the ampulla of Vater, and frequently they cannot be felt within the thickened head of the pancreas; they must be searched for. If one will open the common duct and search for them in all suspicious cases, one will more than double the incidence of discovery of common duct stones, and when one does discover them and removes them one will not increase the operative mortality, one will lower it and improve the end-result. But the important point I wish to make is that we must urge our medical friends not to carry these patients through repeated attacks of gallstone colic with morphine and other sedatives. They must learn that it is delay on their part or the patient's part which makes the ultimate high mortality and bad results.

DR. MOSES BEHREND, Philadelphia: There are three points in the paper of Drs. Judd and Priestley to which I should like to refer. The first is that cholecystectomy is a better operation than cholecystostomy. This has been known for years, but it is wise to call attention to the subject again. There has been less recurrence of symptoms as a result of the operation of cholecystectomy than as a result of cholecystostomy. A important point was brought out in the paper of Drs. Judd and Priestley with respect to the relation of jaundice to cholecystectomy. In all clinics the surgeons develop certain axioms, and one of our axioms is that the gallbladder should never be removed in the presence of jaundice. The changes that occur in the blood in jaundice are well known, and that is one of our reasons for not removing the gallbladder. It was rather surprising to hear Drs. Judd and Priestley say that they had less trouble in those cases in which there were no stones. My experience has been to the contrary; more trouble results following operation in cases without stones than in those in which stones are present. I thought that was the experience of the majority of surgeons. When there are no stones present, these patients develop a certain number of nervous symptoms which somehow or other are not eliminated as the result of operation. An important point touched on was the relation of the gallbladder to heart conditions. In a recent paper before the seminar of the Philadelphia County Medical Society I noted that my experience corresponds exactly with that of Drs. Judd and Priestley. There is no question that there is a profound relationship between infection of the gallbladder and cardiac disease. More than ten years ago Dr. Joseph Wolffe and I did some work on the relation of cardiac disease to gallbladder infection, and we found that after the gallbladder is removed the heart recovers in a certain percentage of cases, whereas in others it remains permanently damaged. I must take exception to the statement of one of the discussers concerning acute gallbladder disease and the walled-off area. I think that one should never remove the gallbladder, even if it is in this walled-off area. If one has made a mistake in diagnosis and operates on an acute gallbladder under a diagnosis of acute appendicitis, the gallbladder should always be drained and not removed. The removal of the gallbladder in acute infections is entirely too hazardous a thing to attempt, on account of the infection that will permeate the entire system.

DR. WILLARD BARTLETT, JR., St. Louis: I have a little further evidence to add to the remarks made by Dr. Lahey. The changes in the liver and in the pancreas have been well known, of course, in chronic biliary infection. Drs. Judd and Priestley have emphasized the appearance of cardiovascular complications. Little attention has been paid, however, to complications in the kidney in conjunction with long-standing gallbladder disease. I am about to report a series of five cases of anuria occurring with cholecystitis. This has been associated in each case so far with jaundice, and whether it is the result of long-standing jaundice or of long-standing infection I am uncertain at present. These cases have occurred in persons in the fifties and over, without exception. It is impossible to say that there has not been not a complicating but simply an additional chronic nephritis in these cases. In two of them, however, I have known that two weeks previous to the onset of the anuria the urine was microscopically and chemically normal, the blood nonprotein nitrogen was normal, and the excretion of phenolsulphonphthalein was above 75 per cent. One of the five patients recovered. All of them, under treatment with 50 per cent solution of dextrose given intravenously, and salyrgan (used very cautiously) showed a temporary improvement. Since observing these cases I have tested all patients with chronic cholecystitis for kidney function, both by phenolsulphonphthalein excretion and by concentration tests. I have definitely observed, and will report later, that in certain patients who are jaundiced or have recently been jaundiced, there is a constant inability to excrete phenolsulphonphthalein satisfactorily and to concentrate the urine. In such cases I have not done a cholecystectomy but have preferred to do cholecystostomy, maintaining the drainage of the biliary tract by the Pezzer catheter (mushroom catheter) in the gallbladder until such period as I felt cholecystectomy could be safely undertaken. That has ordinarily been from three to six months. I have had no difficulties with loss of bile. There are a good many ways of managing that satisfactorily. When these patients who have had preliminary cholecystostomy have returned for cholecystectomy, they have shown a definite improvement in their ability to concentrate their urine and to excrete phenolsulphonphthalein. I present this as an additional reason for not allowing patients to go past 50 years of age, the deadline, more or less, for elective surgery, carrying their chronic abdominal infection into that age group.

DR. I. S. RAVDIN, Philadelphia: These papers and discussions have shown that additional information is required regarding the chemical changes that occur in the bile in gallbladder disease. During the past year my associates and I have been studying the chemical changes that occur in the bile in the human gallbladder. It is only from data of this type that one can gain additional information on the pathologic changes that occur in gallbladder bile after infection of the biliary system. In the first place, it is important to obtain information that will permit one to draw deductions from physiologic observations on

the biliary tract of the dog in comparison with that of the human being. Studies that we have made convince us that in most particulars the concentration of the chemical constituents of the bile in the gallbladder of the human being are the same as those we have described for the dog. The normal bile that we have studied has come from patients who did not have gallbladder disease. In the patients with chronic cholecystitis without stones but in whom gallbladder visualization was obtained by roentgen rays, there is a marked decrease in the bile salt concentration in the bile found in the gallbladder. In the group with chronic cholecystitis with stones but in which gallbladder visualization was also obtained, one finds a lower concentration of bile salts than in the second group, a slightly lower concentration of calcium and an increase in the chloride concentration. In the last group, the cases of chronic cholecystitis with stone in which the gallbladder was not visualized, calcium is not concentrated at all, the chloride concentration is extremely high, and in the majority of instances there is no bile salt present. This shows a progressive change in the chemical constituents of the gallbladder bile with progressive alterations in the pathologic lesion. In a few patients having common duct obstruction from stone, the bile was examined some days after the introduction of a T-tube in the common duct. In every instance one finds that after an interval of frequently three weeks, when the bile looks normal, there is still no bile salt present in the bile coming from the liver as determined by the Gregory-Pascoe reaction, so that the liver as the result of the obstruction is damaged for a longer period than we have previously been led to suspect. This emphasizes a point which Drs. Judd and Priestley brought out, that as yet we do not know the length of time during which the liver remains damaged after common duct obstruction.

DR. J. TATE MASON, Seattle: I should like to call attention to the fact that in the paper of Drs. Judd and Priestley and in much of the discussion, mention has been made several times of complications affecting the common duct following cholecystectomy. The anastomosis between the common duct and the duodenum has been difficult. Anastomosis is not difficult except in a slight degree when an opening is made between the gallbladder and the stomach or from the gallbladder to the duodenum, but I now believe that, when these artificial openings remain patent, in the course of a short time infection is likely to ascend from the viscus through the biliary passages and into the liver, resulting in a chronic hepatitis, which, in turn, is followed by multiple abscesses of the liver. I do not believe that this ascending infection occurs when the anastomosis is made between the common duct and the duodenum and that in patients suffering from stricture of the common duct or benign or malignant tumors of the ampulla of Vater a choledochoduodenostomy is the most satisfactory operation that can be performed. I will present a simple way of anastomosing the common duct to the duodenum: First the common duct is exposed just above the upper border of the duodenum. Two or three, or occasionally four, sutures are then placed from the duodenum to the duct. These form the posterior line of suture of the anastomosis. Just in front and close to the suture line, a small opening is made in the duct and also one in the duodenum. Through these two openings, one above into the common duct and one below into the duodenum, a T-tube is placed which is of approximately the same size as that of the common duct. The lower arm of the tube is in the duodenum and the upper in the common duct, while the stem of the tube of course hangs outside the abdominal wound. The opening in the common duct and duodenum is then sutured up around the stem as closely and as neatly as can be done, with interrupted sutures. During the time that these sutures are being placed, by gently tugging on the stem the surgeon can bring the whole field of operation well up within the wound. When the suturing is completed, the stem of the T-tube is cut off at the point of its junction with the two arms, or as near this point as possible. The small opening left by the stem is sutured over with two or three interrupted sutures, and then to prevent the tube that remains from hanging in the anastomosis for too long a period, the tube is gently pushed down into the duodenum until only about a third of its length is hanging in the anastomosis. This tube passes through the intestinal tract in from five to six days. This method of anastomosis requires only ten or fifteen minutes and hence is very simple, in contrast with what has sometimes been found to be a very difficult procedure.

THE MANAGEMENT OF HEMORRHAGIC PROBLEMS IN INFANCY AND CHILDHOOD

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Hemorrhagic disturbances abound in clinical confusion. The loss of "life" blood alarms parents, the appearance of petechiae perplexes physicians, and a hemorrhagic history preoperatively petrifies surgeons. The hemorrhagic state is ever a problem. Manifest bleeding is precipitated and yields more readily to immediate control than to subsequent prevention, but latent hemorrhage is elusive, defying detection even more than a diagnostic differentiation. Children reveal hemorrhagic symptomatology that is too heterogeneous to be typical, too recurrent to withstand diagnostic delay, too dependent on systemic disease to be primarily hemorrhagic.[1]

The hemorrhagic status of a patient is best evaluated clinically in terms of degree of function of the vascular endothelium and its blood content. Although chemical changes are present in both in most hemorrhagic disturbances, the one or the other necessarily dominates the picture. It is only in truly hereditary hemorrhagic disease that absolute deficiency in the vascular system or in one of the clotting components is characteristically unitary in its pathogenesis. But the number and variety of acquired hemorrhagic diseases are legion. They are necessarily characterized by varying degrees of functional change in the blood channels as well as in the blood-clotting components expressed by the equilibrium:

Reticulo-Endothelial System ⇆ Blood ⇄ Vascular System.

Typical hemorrhagic problems are therefore limited, while the majority reveal varied transitional changes in vascular phenomena and clotting components. One of these factors constitutes the controlling factor. Its determination is indispensable among the criteria essential for final diagnosis. Clinical symptoms alone never suffice for arriving at the exact nature of the underlying condition productive of the hemorrhagic disease. Besides the family history, the past hemorrhagic status, the constitutional susceptibilities, the nutritional regimen, the physical examination, the current therapy and the blood picture, several simple tests are made for the determinations of the blood-clotting and vascular functions.

DIAGNOSIS AND TREATMENT OF HEMORRHAGIC DISEASES: DISTURBANCE IN THE BLOOD CLOTTING FUNCTION

The hematic group of bleeding problems constitutes the essential hemorrhagic diseases—hemorrhagic disease of the new-born, hereditary hemophilia, thrombocytopenic purpura and the diseases of the bone marrow, spleen and liver. Each is characterized by a functional deficiency in one of the clotting components as the controlling factor in the pathogenesis of the hemorrhage. Each clotting factor congenitally deficient is indicative of a specific hereditary hemorrhagic disease. Each disease is amenable to control to the extent that the deficient factor is replaced or regenerated. Bleeding

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Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Kugelmass, I. N.: Arch. internat. de physiol. **21**: 139, 1923.

in these cases tends to be prolonged and continuous once the vascular integrity is disturbed. But until the provoking condition precipitates bleeding many of these and associated conditions constitute potential hemorrhagic disease determined not by symptomatology, but by accidental study of blood-clotting function.

TABLE 1.—*Hemorrhagic Diseases in Infancy and Childhood Resulting Primarily from Blood-Clotting Dysfunction*

Acquired	I. Potential hemorrhagic disturbances			
	II. Hemorrhagic disease of the new-born			
	III. Thrombocytopenic purpura	(a) Essential	1. Bone marrow disease	Agranulocytosis
				Aplastic anemia
				Aleukia hemorrhagica
				Erythroblastic anemia
				Niemann-Pick
				Leukemia
			2. Splenic disease	Banti's
				Gaucher's
				Hemolytic icterus
		(b) Symptomatic	3. Infectious diseases	Endocarditis
				Sepsis
				Syphilis
				Tuberculosis
				Typhoid
				Hemorrhagic measles
				Hemorrhagic scarlet fever
				Hemorrhagic smallpox
			4. Drugs	Mercury, bismuth, and arsenic compounds and potassium iodide
				Arsphenamine
				Quinine
				Phenolphthalein
	IV. Hemorrhagic diseases of the liver		1. Congenital obstruction of bile ducts	
			2. Liver infections, tuberculosis	
			3. Cirrhosis	
			4. Poisoning	Chloroform
				Phosphorus
Familial	I. Hereditary hemophilia			
	II. Hereditary thrombasthenic purpura			
	III. Congenital thrombocytopenia			
	IV. Congenital fibropenia			
	V. Atypical hemorrhagic diseases			

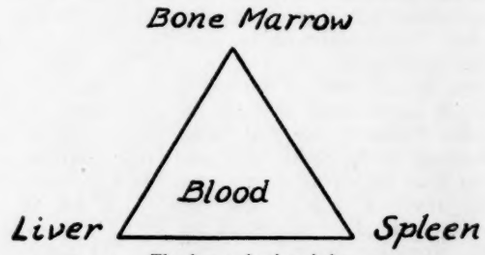
Hemorrhagic Diseases in Infancy and Childhood Resulting Primarily from Vascular Dysfunction

Acquired	I. Nutritional	Scurvy
		Marasmus
		Infantilism (Herter's)
	II. Allergic	Purpura simplex
		Erythema multiforme
		Schönlein-Henoch syndromes
		Purpura fulminans
		Acute infectious diseases
	III. Infectious	Subacute bacterial endocarditis
		Acute infectious diseases
		Sepsis
		Syphilis
		Tuberculosis
		Uremia
	IV. Toxic	Drugs
		Venom
Familial	I. Hereditary telangiectasis	
	II. Atypical hemorrhagic diseases	

Potential Hemorrhagic Disturbances.—Bleeding is not an infrequent symptom in apparently well and active children. To be sure, trauma, infection, drugs and even insect bites induce all forms of benign hemorrhagic manifestations apart from hemorrhagic disease. But there is a group of well children in whom nosebleeds, black and blue spots and other hemorrhagic manifestations are either indicative of potential hemorrhagic disease or, more generally, of diminished blood-clotting function, since the vascular endothelium suffers no disturbance in nutrition in severest anemia or hydremia. The results of physical examination may be negative and clotting time prolonged or normal but the clotting components diminished in prothrombin, fibrinogen or platelets. We [5] have observed in the last five years that these clotting components may be altered by dietary regimen.

Protein and fat tend to increase the concentration of the blood-clotting components, while carbohydrates and minerals tend to decrease it. We [5] have therefore devised a "clotting diet" high in protein and fat, acid forming and low in vegetables and carbohydrates and a "bleeding diet" high in vegetables, carbohydrates and water, base forming and, of course, minimal in protein and fat. The effect of these diets on the clotting function has been demonstrated in animals to shift in the direction of increased bleeding or clotting after a week of such a regimen. Similar results are attained in children whose tendency toward bleeding is discovered accidentally or preoperatively. Our surgical staff has been particularly concerned about the application of these dietaries preliminary to operations to prevent postoperative bleeding in some and thrombosis in others, as predetermined by the index of blood-clotting function.

Hemorrhagic Disease of the New-Born.—Melena is a self-limited symptom complex distinct from other hemorrhagic disturbances in the new-born. It is a transient though severe reaction of the new-born to chemical injury of the reticulo-endothelial system. Its manifestation of bleeding from the mucous membranes may simulate veritable diseases—syphilis and sepsis during the first days of life and purpura, hemoglobinuria and visceral anomalies during the first weeks of life, but the mechanism of melena is less deep-seated; it is self-compensating and even preventable. Potential hemorrhagic disease may be recognized on the first day of life by the prolonged clotting time.[6] This reveals injury in the formation of the blood-clotting substances, prothrombin or fibrinogen. Their diminution is brought about by anesthetic drugs administered during labor, by postnatal hemolysis of red cells as well as by prenatal deprivation of protein and fat on the part of the mother.



The hemorrhagic triad.

Though a multiplicity of factors may be operative in the development of melena neonatorum, the daily injection of 30 cc. of human blood intravenously from the first day of life arrests oozing within twenty-four hours. I have observed in the course of my studies on the nutrition of the new-born that the oral administration of gelatin from birth is preventive of hemorrhagic disease. The feeding of 3 per cent gelatin solution at two hour intervals has reduced the average clotting time of new-born infants from nine minutes to two minutes in about 200 babies, with an equal number of controls, and produced a corresponding rise in clotting function. I have not observed a single case of hemorrhagic disease of the new-born throughout the year during the administration of this modified

5. Kugelmass, I. N., and Samuel, E. L.: Dietary Protein and Blood-Clotting Function, Am. J. Dis. Child. **41**: 48 (Jan.) 1931.
6. Sanford, H. N.; Gasteyer, T. H., and Wyatt, L.: Substances Involved in Coagulation of Blood of the New-Born, Am. J. Dis. Child. **43**: 58 (Jan.) 1932.

solution, which was primarily devised for the purpose of preventing loss of weight in the new-born child.

Prenatal prevention of potential hemorrhagic disease in the new-born is another approach. I [7] have been privileged to see recurrent melena neonatorum in babies born of the same mother, T. N., under the obstetric care of Dr. Tritsch at the Fifth Avenue Hospital. The first four pregnancies terminated in death from hemorrhagic disease, as substantiated by postmortem examination. It was during the fifth pregnancy that a prenatal attempt was made to prevent the anticipated severe melena. The mother's blood showed a concentration of clotting components characteristic of hemorrhagic disease in the new-born. She was given dietary very high in protein, in contrast with her usual low intake of protein, limited during previous pregnancies because of hypertension. The blood-clotting picture became adequate, and a normal infant was delivered at term. The baby has been under my observation for four years and has been perfectly well since birth. Encouraged by her favorable fifth pregnancy, she proceeded to a sixth, but refused to be under rigid nutritional supervision, and was delivered of an infant with melena, proved by postmortem examination in the same institution.

TABLE 2.—*Increase in Blood Clotting Function on a High Protein Dietary in Potential Hemorrhagic Disturbances* *

Case	Prothrombin	Fibrinogen	Antithrombin	Platelets	Lysis	Index
A. J.	0.60	0.36	1.4	210,000	33	0.10
	0.80	0.64	1.0	350,000	40	0.50
B. S.	0.60	0.37	2.2	260,000	19	0.10
	1.00	0.64	1.0	325,000	38	0.60
A. S.	0.01	0.56	10.5	260,000	10	0.01
	0.90	0.75	1.0	275,000	34	0.70
H. R.	0.60	0.60	1.5	150,000	37	0.10
	0.90	0.60	1.0	200,000	37	0.40
J. T.	0.80	0.32	1.1	350,000	30	0.20
	1.00	0.37	1.0	350,000	30	0.30
M. M.	0.60	0.30	1.2	150,000	27	0.20
	0.80	0.50	1.0	230,000	30	0.40
A. H.	0.60	0.60	1.5	175,000	37	0.20
	0.90	0.60	1.0	190,000	31	0.50
M. O.	0.80	0.28	1.0	340,000	50	0.20
	0.80	0.60	1.0	345,000	48	0.40
F. M.	0.60	0.30	1.2	150,000	27	0.20
	0.80	0.50	1.0	230,000	30	0.50

* There was an interval of one month between determinations.

Essential Thrombocytopenic Purpura.—This is a benign disease of the reticulo-endothelial system. It is primary in the spleen, where platelets are destroyed, and secondary in the bone marrow, where lesions interfere with normal platelet formation. The marked reduction in the number of blood platelets and their alteration in size and structure bear no definite relationship to the severity of the bleeding, the bleeding time, the impaired clot retraction and the diminished capillary resistance. This blood picture appearing suddenly in an apparently well child, without cause for the hemorrhagic state, and the posthemorrhagic anemia and leukocytosis determine the diagnosis. These criteria characterize the disease in all grades of severity, in the acute fulminating type, in the transient attack and in the chronic latent course, whether the bleeding is limited to a single source or is widespread.

Effective control of bleeding in acute cases or prevention of bleeding in the chronic problems depends on procedures for increasing the concentration of blood platelets. All other methods are wasteful and without effect. In emergencies, the intramuscular injection of 50 cc. of whole blood, requiring no typing, increases the platelets and arrests hemorrhage. But large transfusions from a suitable donor not only supply platelets but actually stimulate platelet generation. They must be repeated every fourth day, paralleling the average life of infused platelets. Feeding high in fat and rich in vitamin D and ultraviolet irradiation, particularly after anointing the body with wool fat, produce transient rises in platelets and help to tide over an acute problem.

Persistent bleeding in 70 per cent of chronic cases is permanently relieved by splenectomy. It is unfavorable in acute conditions in which the mortality is 80 per cent in comparison with 8 per cent in the chronic cases. The operation must be properly timed for obtaining favorable postoperative prognosis. Preliminary roentgen irradiation of the spleen produces a leukopenia which is an unfavorable prognostic omen. Splenic enlargement is not a necessary criterion for operation, although the removal of massive spleens has saved lives from being lost through uncontrollable hemorrhage. Following splenectomy the platelets may rise to a million and then return to normal levels in patients in whom platelet destruction has been the mechanism. But in those in whom platelet formation has been retarded, the postoperative rise in platelets is less marked, and the subsequent level attained is necessarily low.

Symptomatic Thrombocytopenic Purpura.—Purpura is a hemorrhagic symptom widespread among many diseases. Besides the essential type, it may be a manifestation of clinical syndromes associated with diminution in blood platelets in diseases of the bone marrow, spleen and reticulo-endothelial system as a result of infection or intoxication, or it may be a symptomatic expression of mere capillary injury in the course of systemic infection, chemical intoxication, allergic offense and a variety of other capillary-toxic conditions. In the one group of conditions, the blood picture is a revelation of injury to the blood cells, whereas in the other group the blood picture is usually normal. Purpura therefore becomes primarily a problem for careful clinical differentiation between the varied types of diseases characterized by either clotting or vascular dysfunction. Diagnostic differentiation makes all the difference between benign and malignant diseases, effective and fancied therapy, favorable and fatal prognosis.

TABLE 3.—*Hemorrhagic Disease of the New-Born*

Name	Day of Onset	Duration of Bleeding, Days	Clotting Time	Bleeding Time	Clot Retraction	Tourniquet Test	Prothrombin	Fibrinogen	Antithrombin	Platelets	Lysis	Index
C. W.	Third	1	5	2	+	—	1.0	0.2	1.25	300,000	43	0.3
D. B.	Third	2	10	4	+	—	0.6	0.2	1.5	165,000	30	0.05
A. S.	First	0	20	2	+	—	0.3	0.5	2.0			
W. H.	Third	3	31	2	+	—	0.3	0.5	2.0	165,000	40	0.05
C. M.	First	1	40	3	+	—	0.2	0.4	3.0			
J. B.	Second	3	45	3	+	—	0.2	0.5	4.3	280,000	40	0.04
H. B.	First	0	50	2	+	—	0.1	0.6	2.5	175,000	35	0.01
E. D.	First	0	60	3	+	—	0.4	0.8	2.5	220,000	45	0.1
B. L.	Second	5	90	15	+	—	0.3	1.1	5.0	200,000	35	0.05
A. G.	Second	2	120	5	+	—	0.1	0.4	5.0	180,000	40	0.01

Treatment of symptomatic thrombocytopenic purpura necessarily depends on the primary diseases. Splenectomy is indicated in Gaucher's disease and in constitutional hemolytic anemia, because the purpuric

7. Kugelmass, I. N., and Tritsch, J. E.: Prenatal Prevention of Potential Hemorrhagic Disease of New-Born, J. A. M. A. **92**: 531 (Feb. 16) 1929.

mechanism is similar to that of essential thrombocytopenic purpura. But the great variety of other conditions is the result of destruction of blood-forming organs by intoxication, infection or infiltration resulting in malignant thrombocytopenia. Some infectious diseases injure specifically the megakaryocyte mechanism. Primary blood diseases in addition affect the formation of other blood cells. Certain drugs likewise reduce myeloid elements of the blood. These myelotoxic conditions are malignant, resisting all forms of therapy. But the associated vascular injury and infiltration may be influenced to arrest bleeding by diminishing capillary permeability. The slow intravenous injection of 10 per cent calcium gluconate or chloride daily in 20 cc. amounts, supplemented by oral administration of calcium salts, is a transient therapeutic measure alternated with blood transfusions. But splenectomy is contraindicated.

Purpuric problems are rarely patterned according to the textbook. Only purpuric children can illustrate how strikingly borderline diagnostic criteria may be.

Characteristic thrombocytopenic purpura with remissions developed in Dr. Marton's 8 year old boy, until splenectomy became imminent. When he came under my observation I found that he had been quantitatively deprived of protein and fat because of chronic eczema. As a last resort, a dietary high in protein and fat brought the platelets from 20,000 to 400,000, with the disappearance of purpura in 1927. Obviously, I am not advocating dietary specificity in thrombocytopenic purpura.

S. T. was admitted because of thrombocytopenic purpura with severe bleeding from the gums for five months, but without other hemorrhagic symptoms. Examination of the blood showed: hemoglobin, 28 per cent; red blood cells, 1,200,000, and white blood cells and differential count, normal. The platelets numbered 40,000, and the tourniquet test was positive. Systemic treatment of the severe Vincent's infection and transfusions of blood cleared up the problem, for which splenectomy was, of course, not indicated.

N. K., a boy aged 5 years, had had hemorrhagic otitis media, epistaxis and hematuria following tonsillectomy at 3 years of age, at which time the clotting and bleeding times were normal. Purpuric symptoms recurred for two years until admission to the hospital. Examination of the blood showed: clotting and bleeding times, normal; tourniquet test negative; platelets, 35,000, and white blood cells and differential count, normal. The spleen was not palpable. After treatment with a clotting dietary the platelets rose to 240,000, but fell with the remission of symptoms. Splenectomy brought the platelets to 415,000, with recovery.

M. S., a girl aged 11 years, was admitted to the hospital with repeated and severe epistaxis for a week. Epistaxis and excessive bruising appeared periodically for two years, requiring medical care. The clotting and bleeding times were normal. The tourniquet test was negative, and the platelets numbered 110,000. The spleen was not palpable. The blood picture was normal. The consensus was against splenectomy, but it was performed in another hospital under unfavorable conditions of uncontrollable hemorrhage four months later, with recovery.

Hereditary Hemorrhagic Diseases of Blood-Clotting Dysfunction.—Hereditary hemophilia, a clinical chimera for many a bleeding problem, is too rare a condition to cover so many hemorrhagic disturbances and is too well defined an entity to become a haphazard label of hemorrhagic confusion. Bulloch and Fildes have been able to authenticate only 44 hemophilic families of 273 reported in a century of literature since its classic description by Otto in 1803. The disease occurs exclusively in the male, with a typical familial bleeding pattern, and must not be confused with other familial hereditary hemorrhagic diseases afflicting females. It is transmitted through the female, although the mothers of our hemophilic boys showed normal blood-clotting function. It is characterized by prolonged duration of bleeding, even though the clotting time often is only slightly prolonged. It paradoxically shows a normal bleeding time, because the clotting function of the skin is greater than that of the mucous and serous membranes. Hemophilic blood shows the lowest index of blood-clotting function, with a normal or an increased number of platelets physiologically defective because of their strikingly great resistance.

TABLE 6.—*The Concentration of Clotting Components and the Index of Blood Clotting Function in Hereditary Hemophilia*

Case	Age, Years	Date	Prothrombin	Fibrinogen	Antithrombin	Platelets	Platelet Disintegration, per Cent	Index
C. M.	2	11/11/30	0.12	0.46	5.7	305,000	30	0.009
C. B.	4	3/ 5/28	0.33	0.64	4.1	370,000	32	0.05
D. B.	6	3/ 5/28	0.13	0.56	6.8	300,000	10	0.003
P. G.	5	5/ 4/30	0.22	0.64	3.6	360,000	34	0.036
D. A.	7	4/19/29	0.22	0.64	5.0	300,000	..	0.02
C. M.	10	8/ 8/30	0.11	1.04	6.5	700,000	37	0.017
J. R.	20	2/13/31	0.11	0.54	6.2	200,000	30	0.01
E. S.	30	9/12/29	0.21	0.54	6.2	230,000	12	0.02
Normal	..	.....	1.00	0.50	1.0	250,000	50	0.50

Diagnostic criteria are not always clearcut in transitional hemorrhagic problems.

C. M., a boy aged 2 years, showed no tendency toward bleeding until many bruises appeared following trauma incident to walking at 11 months of age. There was no such history in three preceding generations of the family. The clotting time was six minutes, but the clotting index was 0.009 when the picture of the blood was otherwise normal.

D. B., a boy aged 6 years, with hemophilic joints, showed a clotting time of eleven minutes, a bleeding time of eighteen minutes, normal platelets, a positive tourniquet test and normal clot retraction. The father was allergic. A diagnosis of hemophilia with athrombopenic purpura was made.

G. M., a boy aged 10 years, had required repeated transfusions of blood following slight traumas since birth. He was under my observation for hemophilic arthritis two years ago. Recently bronchopneumonia with otitis media had developed, precipitating spontaneous bleedings from the nose and gums. Examination showed: clotting time, ten minutes; bleeding time, thirteen minutes; platelets, 60,000; spleen, enlarged, and tourniquet test, negative. The case was considered to show transient purpuric picture in hemophilia.

B. S., a boy aged 9 years, was admitted to the hospital as a "hemophilic" after three other hospitals had refused tonsillectomy because of prolonged clotting time. Hemorrhage had first occurred after myringotomy in infancy. Easy bruising followed slight trauma. There was no family history of hemophilia. The clotting index was 0.2, and was increased to normal by calcium therapy and clotting dietary. Tonsillectomy was performed without postoperative bleeding.

Hemophilic bleeding can be controlled but not cured. Mild bleeding may be stopped locally by applications of fresh raw meat, fresh blood or cephalin after the removal of useless clots, since pressure alone is contraindicated. All other hemostatics locally applied are ineffective. Severe bleeding may be checked for four days by the transfusion of whole blood from a suitable donor. Even an ounce of injected blood arrests hemorrhage, but the degree of subsequent improvement depends on the amount of blood given. Stored serum is ineffective in inhibiting clotting but an ounce of fresh serum arrests bleeding within a day.

Protein sensitization is beneficial in diminishing bleeding from superficial injuries as well as in abating recurrences. The child is sensitized to horse serum

by subcutaneous injection of 3 cc. of serum. We have seen no difference between the use of diphtheria and antivenene serum. At the end of a week the child is given 2 minims (0.1 cc.) of the serum, injected intradermally, which demonstrates successful sensitization by the wheal formation. Intradermal injection should be repeated monthly for the maintenance of sensitivity, an effect primarily on the capillary system. The treatment is helpful in hemophilic arthritis, for which autogenous blood has also been given intramuscularly. Obviously, the sensitization mechanism is the same. It increases the recession of the hemorrhagic joint, which must be immobilized in a neutral position by means of plaster casts when necessary.

The prevention of hemophilia is a problem for eugenics. The course of the disease can be altered. Nature spares hemophilic new-born infants from the effects of birth trauma by the transmission of an abundance of female sex hormone into the infant's circulation. Thus it is that the disease does not become manifest until late in infancy, unless surgical intervention precipitates bleeding. The disease tends to ameliorate with growth, particularly after the endocrine adjustment of puberty. The absence of the female sex hormone in hemophilic persons has made its isolated preparation a therapeutic indication.[8] I have found that the injection of female sex hormone preparation alone or reinforced by anterior solution of pituitary produces no change in the concentration of the clotting substances from the levels characteristic of hemophilic subjects. I have observed that 500 mouse units of the hormone is necessary to increase the capillary resistance sufficient for it to reveal a negative test within two days in hemorrhagic diseases affecting vascular integrity rather than the blood-clotting content.

Our hemophilic boys with joint manifestations have benefited most during the year in that the periodic effusions were diminished. The hormone therapy has not diminished the tendency to bruising, but has decreased the tendency to bleeding following natural trauma. The avoidance of trauma by limitation of activity requires compensatory physical therapy to improve muscle tone. The maintenance of bodily warmth and vacations in warm climates appear, in addition, to alter favorably the course of the disease. The clotting dietary has produced no appreciable effect on the hemorrhagic status of hemophilic persons. Infection has been found to precipitate bleeding particularly into the skin and joints. Operative emergencies are safely carried out after preliminary transfusion.

Hereditary Thrombasthenic Purpura.—Typical manifestations of thrombocytopenic purpura may be simulated by this hereditary disease involving strikingly abnormal and functionally inactive platelets. It is a familial defect transmitted from generation to generation to both males and females. It is readily differentiated from hemophilia in this respect as well as in the blood picture. The number of platelets fluctuate in different members of these families from relatively low normal to high values. Abnormalities in their size, shape and staining qualities and failure of agglutination are characteristics common to all. As a consequence, the bleeding time is prolonged, the clotting time is normal, the clot retraction retarded, the tourniquet test positive, the spleen rarely enlarged and purpuric bleeding a common symptom.

Such was the case of a girl aged 10 years, who continued to bleed excessively despite splenectomy performed on the basis of supposed chronic thrombocytopenic purpura. She had had recurrent epistaxis and purpura since the first year of life. The mother, who bled mildly, died during childbirth. The son did not bleed. The patient was admitted to the New Jersey hospital for an emergency operation. Preoperative examination of the blood showed: hemoglobin, 60 per cent; red blood cells, 3,200,000; white blood cells, 17,000; polymorphonuclears, 80 per cent; lymphocytes, 8 per cent; monocytes 6 per cent; platelets, 350,000; lysis, 12 per cent; tourniquet test, negative; clotting time, ten minutes; bleeding time fifteen minutes; clot retraction, absent. Transfusion was effective, but vascular therapy was without avail.

DISTURBANCES IN VASCULAR FUNCTION

The bleeding problems of the vascular group are, strictly speaking, nonhemorrhagic diseases. The blood in each disease shows no abnormality in clotting function but capillary dysfunction. The vascular changes are produced in one of several ways: softening of cement substances binding the endothelial cells, injury of the living cells, destruction of elastic fibers and disturbance in innervation for normal contractility of the walls of the vessels. The hemorrhagic disturbances are spontaneous, single or multiple, but with little tendency toward continued bleeding. The bleeding in each of these diseases is better tolerated than in those of abnormal blood content. The transient injury to the capillaries becomes manifest in extravasations of blood, as in scurvy, Schönlein's and Henoch's diseases, on the one hand, and by blood combined with inflammatory exudations, as in severe infectious diseases and in chemical poisoning, on the other. Effective treatment of the heterogeneous group depends on the administration of substances to decrease capillary permeability immediately while the controlling factors are being corrected.

Avitaminosis.—Vitamin deficiency results in degeneration of the capillary endothelium. Scurvy is the classic example of the specific relation of vitamin C deficiency to the extravasation of blood under the periosteum and in the deep muscles, and into the skin and mucous membranes and around hair follicles. Infection accentuates vascular injury. Aschoff demonstrated separation of cement substances binding vascular endothelial cells. The blood-clotting function is normal, except for the positive tourniquet test, which is indicative of capillary injury. In severe cases there are changes in the bone marrow, with interference in the myeloid activity, causing a diminished platelet formation. But the initial vascular phenomena control the clinical picture of scurvy in children.

Deficiency in vitamin B_1 (or F) has likewise been demonstrated to injure the vascular endothelium to the extent of producing hemorrhagic manifestations. There is evidence that deficiency of this vitamin in the diet of the pregnant woman is one of the factors responsible for hemorrhagic disturbances in the newborn child involving vascular injury. Hemorrhagic manifestations definitely associated with avitaminosis have been observed in the course of marasmus and Herter's infantilism. The nutrition of the vascular endothelium evidently depends in part on vitamin adequacy,[9] the minutiae of nutrients, while blood content in clotting substance depends on the gross nutrients, protein and fat.

8. Birch, C. L.: Hemophilia and Female Sex Hormone, J. A. M. A. 97: 244 (July 5) 1931.

9. Kugelmass, I. N., and Samuel, E. L.: Avitaminosis and Blood Clotting Function, Am. J. Dis. Child. 43: 52 (Jan.) 1932.

Allergic Purpura.—Recurring symptom complexes of the skin, joints or intestines reveal purpuric spots. Cutaneous eruptions with erythema, urticaria and angioneurotic edema as well as purpura constitute erythema multiforme. Mild arthritis with pain, tenderness and swelling of the joints of the lower extremities

TABLE 7.—*Blood Content in Clotting Components in Hemorrhagic Diseases in Infancy and Childhood Resulting Primarily from Vascular Dysfunction*

Case	Diagnosis	Prothrombin	Fibrinogen	Antithrombin	Platelets	Lysis	Tension Test	Index
	I. Nutritional							
A. L.	Scurvy	1.0	0.64	1.00	250,000	38	+	0.60
A. M.	Scurvy	1.0	0.74	1.00	300,000	33	+	0.70
R. N.	Marasmus	1.0	0.48	1.07	180,000	37	+	0.45
B. L.	Herter's infantilism	0.9	0.20	1.07	250,000	40	+	0.20
	II. Allergic							
A. F.	Erythema multiforme	0.6	0.64	1.25	180,000	30	+	0.35
E. M.	Henoch's purpura	1.0	0.74	1.00	385,000	35	+	0.70
A. L.	Schönlein's purpura	1.0	0.44	1.00	270,000	25	+	0.46
	III. Infectious							
D. S.	Endocarditis	1.0	1.30	1.00	315,000	39	+	1.30
A. R.	Cardiovascular	1.0	0.64	1.00	225,000	33	+	0.65
J. M.	Cardiovascular	1.0	0.64	1.00	140,000	28	+	0.70
M. H.	Cardiovascular	0.9	0.90	1.00	310,000	29	+	0.80
L. M.	Cardiovascular	1.0	0.64	1.00	230,000	28	+	0.60
A. J.	Diphtheria	1.1	0.64	0.96	255,000	39	+	0.70
M. L.	Pneumonia	1.2	1.64	0.96	300,000	40	+	2.00
S. L.	Pneumonia	1.0	1.96	1.00	215,000	41	+	1.90
G. B.	Pneumonia	1.1	1.54	0.96	340,000	41	+	1.80
H. R.	Encephalitis	1.0	0.94	1.00	310,000	35	+	0.90
M. P.	Tuberculosis	1.0	0.69	1.00	175,000	31	+	0.70
R. G.	Syphilis	1.0	0.94	1.00	310,000	29	+	0.90
L. G.	Syphilis	1.0	0.94	1.00	215,000	30	+	0.90
A. S.	Syphilis	1.0	0.74	1.00	225,000	46	+	0.70
B. C.	Syphilis	1.0	0.94	1.00	110,000	28	+	0.90
N. C.	Septicemia	1.0	2.36	1.00	1,300,000	38	+	2.35
D. V.	Septicemia	1.3	0.64	0.90	225,000	33	+	0.90
F. G.	Uremia	0.7	1.00	1.00	280,000	33	+	0.70
	IV. Toxic							
E. H.	Lead poisoning	2.0	0.46	0.86	300,000	40	+	1.10

clustered with purpuric spots constitute Schönlein's purpura. Attacks of colic, with abdominal pain, tenderness and rigidity, purpuric spots over the skin and blood in the vomitus, urine and stools constitute Henoch's purpura. The blood-clotting function is normal but for the positive capillary resistance test. This heterogenous group of syndromes has a common allergic basis in that increased capillary permeability is suddenly produced by certain foods or bacterial toxins in allergic children.

Treatment involves clearing up of the infection and simultaneous elimination of the allergic offense. Intestinal disinfectants, colonic irrigations, belladonna suppositories, protein desensitization, ephedrine administration, salicylate medication and intravenous saline and calcium therapy are the effective procedures. Injection of foreign protein results in violent reactions; transfusions are unnecessary and splenectomy, of course, out of order.

E. M., a girl aged 5 years, the daughter of a physician, on presentation had purpuric spots over the lower extremities. There was great anxiety about threatened splenectomy. A year ago, the child had severe tonsillitis, with associated pain in the abdomen, knees and legs. After subsidence of the fever, tonsillectomy was performed on the basis of supposed rheumatic fever. After the operation purpuric extravasations and petechiae appeared over the legs. No such manifestations again appeared until this winter, when a similar syndrome recurred after each infection of the upper respiratory tract. Attacks of urticaria and ecchymoses alternated or appeared simultaneously. The child was admitted to the hospital for study as having a case of allergic purpura. Platelets numbered 385,000; the tourniquet test was positive, and the clotting and bleeding times normal. Both the father and the patient were allergic. Bacterial desensitization is in progress.

A. W., a girl aged 12 years, with similar symptomatology, was seen in consultation during an attack that simulated gastric ulcer. Hematemesis, abdominal pain and epigastric tenderness clouded the clinical picture. The blood picture and a roentgen series of the gastro-intestinal tract were negative. During convalescence deep intramuscular hemorrhages prolonged the pain and tenderness of the lower extremities.

Hemorrhagic Infectious Diseases.—Hemorrhagic symptoms predominate in infectious invasion. Vascular injury usually exceeds the disturbances in myeloid function, but the relative changes in each depend on the severity of the infection. I have observed as confirmation of vascular injury petechiae containing the organisms of meningococcemia, embolic abcesses with visceral hemorrhages in pneumococcemia, nosebleeds and even hemorrhagic sputum in epidemic influenza, thrombotic petechiae consisting of tuberculids, punctate hemorrhages in scarlet fever, bleeding of the mucous membranes in diphtheria, hemorrhages from the mucous membranes in congenital syphilis and purpura associated with the presence of endothelial cells in circulating blood of subacute bacterial endocarditis.

Capillary hemorrhages are not infrequent as consequences of vascular congestion in the course of chronic infections. Rheumatic heart disease induces epistaxis or congestion hemorrhages in the lower edematous extremities. Pertussis precipitates hemorrhages into the conjunctivae and eyelids as well as from the nose and bronchi. Uremia occasionally reveals terminal cerebral, retinal and intestinal hemorrhages rather than petechiae. The hemorrhagic symptoms in uremia parallel the severity of capillary damage from infection and not the degree of nitrogenous retention. Increased venous pressure in normal circulatory systems is not a determining factor in these bleeding manifestations.

Arrest of bleeding in the course of infectious invasion may be brought about by therapeutic measures for decreasing capillary permeability. Elimination of infection is, of course, the primary concern, but the self-limited nature of infectious disease necessarily requires vascular medicaments. Clinically, calcium salts have been used in most hemorrhagic diseases for centuries,

TABLE 8.—*Therapeutic Measures for the Arrest of Bleeding*

Procedure	Platelet Deficiency	Fibrinogen-Prothrombin Diminution	Vascular Disturbance
Local	Coagulen, ultraviolet irradiation	Thromboplastin, meat juice	Styptysate
Oral	Viosterol	Cephalin, fibrinogen	Calcium salts
Nutritional	Dietary fat (unsaturated lipids)	Dietary protein (gelatin, viscera)	Base-forming foods
Intramuscular	Foreign protein	Blood serum	Pituitary parathormone
Intravenous	Transfusion	Transfusion	10% calcium salts, 10% gelatin

with favorable effect but based on erroneous interpretations. The calcium required in the clotting mechanism is rarely found wanting in amounts necessary for this process. Even the striking clinical entities involving hypocalcemia never reveal bleeding symptoms.

Calcium therapy is indicated in abnormal bleeding resulting from vascular dysfunction. Its effect is specific in decreasing capillary permeability. The calcium salts administered have no bearing whatever on

elevating the well buffered calcium content of the blood. Calcium therapy is best administered intravenously in a 10 per cent solution of calcium gluconate or calcium chloride, from 10 to 25 cc. injected very slowly. Oral administration is, of course, slower in its effect, but may well be supplemented in from 5 to 10 grain (0.33 to 0.65 Gm.) doses offered between feedings to prevent its precipitation into the intestinal tract and subsequent loss in the stools.

The administration of gelatin arrests bleeding by condensing platelets on the vascular bed. It may be injected intravenously in 10 per cent solution from 20 to 40 cc., or fed in 10 per cent solution either directly, sweetened and flavored with vanilla, mixed with milk or as a jelly, which may be kept on ice for two days.

Solution of pituitary is an effective vasoconstrictor in arresting bleeding. This mechanism is operative in vascular beds other than those of the female genital organs. The injection of 0.5 cc. of pituitary frequently suffices to arrest capillary oozing when due to vascular injury. The action is more prolonged than that of epinephrine hydrochloride. It is the vasopressor fraction of the posterior lobe that affects the vascular endothelium in the direction of increased blood coagulation.

Diet affects the hemorrhagic status of patients even in the course of severe infection. It tends to increase the blood clotting components to the extent of producing a thrombotic picture. And yet bleeding from mucous membranes may be present because of embolic phenomena associated with the vascular injury. Therefore, the dietary indicated is for reduction of the increased coagulability of blood. This is attained by fruits, vegetables and carbohydrates, with the exclusion of proteins and fats.

H. R., a boy aged 4 years, was admitted to the hospital with a history of convulsions associated with a severe infection of the upper respiratory tract. Hemorrhage appeared in the orbit and marked purpuric extravasations over the trunk and upper extremities. Facial weakness and complete right hemiplegia followed. Examination of the spinal fluid gave negative results. Examination of the blood showed: clotting and bleeding times, normal; tourniquet test, positive; platelets, 310,000; platelet lysis, 35 per cent, and blood clotting function, normal. An encephalitic infection was the cause of the purpura.

N. C., a boy aged 5 years, had recurrent severe epistaxis in the course of osteomyelitis with septicemia. The blood clotting function was five times normal, with platelets ranging around 1,300,000 per cubic centimeter, and yet vascular injury as a result of the infection was not compensated for by the thrombotic blood picture. On the other hand, I have seen neither hemorrhagic symptoms nor angina in B. S., a boy of 8, with lymphatic leukemia and a platelet count as low as 40,000. It is folly indeed ever to relate the hemorrhagic status to one factor alone.

SUMMARY

1. Hemorrhagic disturbances are syndromes associated with many diseases and produced by varied causes.

2. Clinical examination must be correlated with the blood picture in arriving at a diagnosis of hemorrhagic disease.

3. Methods are presented for the determination of the hemorrhagic status of a patient in terms of degree of function of the vascular endothelium and its blood content.

4. Hemorrhagic problems are rarely patterned according to the textbook, although a clotting component or a vascular alteration determines the controlling factor diagnostic of the disease.

5. Potential hemorrhagic disturbances reveal a low index of blood clotting function improved by a dietary high in protein and fat.

6. Potential hemorrhagic disease of the new-born may be prevented by the oral administration of gelatin solution and prenatally by a clotting dietary.

7. Diagnostic differentiation with appropriate therapy is given critically for problems of thrombocytopenic purpura.

8. Bleeding associated with diseases of the liver is interpreted on the basis of disturbed liver function.

9. Hemophilia, a clinical chimera for abnormal bleeding problems, can be definitely diagnosed and controlled therapeutically.

10. Abnormal bleeding resulting from vascular injury constitutes nonhemorrhagic disease characterized by normal blood clotting function.

11. Avitaminosis results in degeneration of the vascular endothelium observed in scurvy, marasmus and Herter's infantilism.

12. Allergic purpura, previously designated as erythema multiforme, is a symptom complex involving the skin, joints and intestines, Schönlein's purpura and Henoch's purpura, respectively.

13. Severe infections and chemical poisons are primarily toxic for capillaries, requiring vascular medicaments for arrest of bleeding.

14. Atypical hereditary hemorrhagic diseases involving deficiency in "clotting components" or in vascular endothelium still prevail without diagnostic characterizations.

15. A clinical classification of hemorrhagic diseases is offered, based on alterations in vascular endothelium or its blood content.

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ABSTRACT OF DISCUSSION

DR. HEYWORTH N. SANFORD, Chicago: When Dr. Kugelmass's work was first published, two years ago, it occurred to me that in the new-born a valuable medium had become available for the study of this problem. Here is an organism that has as yet not been influenced by external conditions. In using this method I obtained the values of fibrinogen, prothrombin and antithrombin on thirty-five new-born infants daily and was surprised to find that in every instance these values were high enough to cause an increase in the clotting index or, rather, to show that in all these cases there was every indication against the blood of the new-born clotting unless some external factor was brought into play. In an attempt to manipulate these clotting components to see whether clotting in the new-born could be increased or decreased, a number of things were tried. First, I attempted this by giving large doses of vitamin D in the form of viosterol and using ultraviolet rays. Dr. Kugelmass has stated that he was unable to find very much change in these elements, using vitamin D and ultraviolet rays. That is quite true. But if excessive doses of viosterol, as high as 60 drops a day, are used, and long exposures to ultraviolet rays, as long as ten minutes, one can by increasing the fibrinogen cause a slight increase in the bleeding time and coagulation time. I might say the increase in fibrinogen is compensated for by an increase of antithrombin, so in a few days the patient is worse off than he was before, and his blood will not clot as readily. In continuing the study, it occurred to me that possibly food elements had considerable to do with this. About six months before, I had begun a complement feeding in which two-thirds milk and one-third water and 6 per cent dextrose was given to infants as soon as they were born. If this had anything to do with the clotting components, obviously if protein and fat were withdrawn one would expect to find certain differences. Therefore, in a group of new-born infants, all feeding was withheld for the first five days of life, with the exception of 6 per cent dextrose ad libitum, and Ringer's solution. The children were all normal.

There was no loss of weight or any dehydration temperature. The fibrinogen was decreased in all of these cases, so that the children were becoming essentially hemorrhagic. I might say that in using this heavy protein and fat feeding as an early complement for the last two years, I have not had a single case of hemorrhagic disease on my service. By manipulation of the fat and protein in the diet, it is possible to change the coagulation of the blood practically at will.

DR. I. NEWTON KUGELMASS, New York: Dr. Sanford confirmed strikingly my work on the dietary rôle in hemorrhagic diseases, so far as it applies to the new-born. This he has done even more effectively than I have been able to demonstrate in the heterogeneous bleeding problems that have been studied during the past five years. The difficulty of obtaining blood from new-born infants has been compensated for by the clarity of results obtained at that period of life which is as yet uninfluenced by the varied factors that modify the hemorrhagic status of children. It is gratifying that Dr. Sanford found my index of clotting function applicable to the study of hemorrhagic disease. So far as vitamin D is concerned in the clotting mechanism, I have not observed marked changes in the platelet count unless dietary fat had been considerably reduced for prolonged periods of time. Fat intake, particularly in unsaturated lipids, appears to parallel the level of blood platelets; but the vitamin D content is not as directly related. Its effect is more to mobilize the available calcium for decreasing capillary permeability than to any other phase of the clotting process. I have not had occasion to study the effect of large doses of vitamin D or ultraviolet irradiation on the clotting mechanism, as has Dr. Sanford. I have concentrated more on manifest bleeding problems to determine to what extent they can be influenced by different therapeutic procedures as measured by the index of clotting function.

SICKLE CELL ANEMIA

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AND
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Twenty-two years have elapsed since Herrick[1] first described a case of sickle cell anemia. During this period, sixty odd cases of the condition have been reported in detail, and mention has been made in the literature of more than a hundred others. Considerable experimental work has been done in investigation of the cause and nature of sickle cell anemia, with results that sometimes conflict.

ETIOLOGY AND INCIDENCE

Sickle cell anemia is a disease of young people. The average age in the reported cases is 13 years. Only five cases have been reported in patients over 30, though one case has been reported at 62.[2] The youngest patient whose case was reported was 7 months old.[3] The low age incidence is explained by the fact that these patients have a decreased resistance to disease, and usually succumb early to respiratory or other infections.

Males are affected more than females, in a ratio of almost 2:1 in the reported cases.

The disease affects the colored race primarily, and until recently it was believed that it occurred only in Negroes. Cases were reported in an Arab[4] and a Cuban,[5] in neither of whom the possibility of Negro blood was excluded. Castana[6] reported a case in an Italian, and Cooley and Lee[7] described a typical case in a Greek child in whom the possibility of Negro blood was practically excluded. Recently, Sights and Simon[8] have added to the literature a well marked case in a man of Scotch-Irish blood. These cases definitely establish the occurrence of sickle cell anemia outside of the colored race, although it is among Negroes that the disease is chiefly found.

All except two cases have been reported from the United States. In this country the disease is distributed roughly according to the proportion of Negro population, the greatest number of cases being found in the Southern states.

The disease shows a definite familial tendency. In a number of cases in which blood from other members of the patient's family was examined, sickle cells were found. Huck[9] demonstrated this feature quite decisively in a study of two families through three generations. He concluded that the condition is transmitted according to the mendelian law as a dominant trait.

PATHOLOGY[10]

The pathology of sickle cell anemia is limited to the spleen, liver and bone marrow; the most characteristic picture is found in the spleen. The spleen varies greatly in size, cases having been reported in which it weighed 2.4[11] Gm. and 621[12] Gm. In general, it may be said that the spleen enlarges rapidly during infancy and gradually becomes atrophic after the child reaches the ages from 4 to 6 years. The average age of patients with enlarged spleen is 5 years. The largest spleens are usually found in the youngest patients, though there are exceptions to this rule.

The splenic capsule is thickened and often rough. The cut surface of the organ is darker than usual and

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1. Herrick, J. B.: Peculiar Elongated and Sickle Shaped Red Blood Corpuscles in a Case of Severe Anemia, Arch. Int. Med. **6**: 517 (Nov.) 1910.
2. Sydenstricker, V. P.: Sickle Cell Anemia, South. M. J. **17**: 177 (March) 1924.
3. Anderson, W. W., and Ware, R. L.: Sickle Cell Anemia, Am. J. Dis. Child., to be published.
4. Archibald, R. G.: A Case of Sickle Cell Anemia in the Sudan, Tr. Roy. Soc. Trop. Med. & Hyg. **19**: 389 (Jan.) 1926.
5. Stewart, W. B.: Sickle Cell Anemia: Report of a Case with Splenectomy, Am. J. Dis. Child. **34**: 72 (July) 1927.
6. Castana, V.: Gigantocytes and Sickle Cells, Pediatria **33**: 431 (April 15) 1925; abridged, J. A. M. A. **84**: 1966 (June 20) 1925.
7. Cooley, T. B., and Lee, P.: Sickle Cell Anemia in a Greek Family, Am. J. Dis. Child. **38**: 103 (July) 1929.
8. Sights, W. P., and Simon, S. D.: Marked Erythrocytic Sickling in a White Adult, Associated with Anemia, Syphilis and Malaria, J. Med. **12**: 177 (June) 1931.
9. Huck, J. G.: Sickle Cell Anemia, Bull. Johns Hopkins Hosp. **34**: 335 (Oct.) 1923.
10. Summarized from the literature:
    (*a*) Bell, A. J.; Kotte, R. H.; Mitchell, A. G.; Cooley, T. B., and Lee, P.: Reports of Two cases in Young Children in Which Splenectomy Was Performed, Am. J. Dis. Child. **34**: 923 (Dec.) 1927.
    (*b*) Bennett, G. A.: Sickle Cell Anemia, Arch. Path. **7**: 801 (May) 1929.
    (*c*) Graham, G. S.: A Case of Sickle Cell Anemia with Necropsy, Arch. Int. Med. **34**: 778 (Dec.) 1924.
    (*d*) Hein, G. E.; McCalla, R. L., and Thorne, W. G.: Sickle Cell Anemia: With Report of a Case with Autopsy, Am. J. M. Sc. **173**: 763 (June) 1927.
    (*e*) Huck, J. G.: Sickle Cell Anemia, Bull. Johns Hopkins Hosp. **34**: 335 (Oct.) 1923.
    (*f*) Hahn, E. V.: Sickle Cell (Drepanocytic) Anemia, Am. J. M. Sc. **175**: 206 (Feb.) 1928.
    (*g*) Hahn, E. V., and Gillespie, E. B.: Sickle Cell Anemia, Arch. Int. Med. **39**: 233 (Feb.) 1927.
    (*h*) Jaffé, R. H.: Die Sichelzellanamie, Virchows Arch. f. path. Anat. **265**: 452, 1927.
    (*i*) Landon, J. F., and Lyman, A. V.: Sickle Cell Anemia with a Case Report of Splenectomy, Am. J. M. Sc. **178**: 223 (Aug.) 1929.
    (*j*) Rice, A. R.: The Splenic Lesion in Sickle Cell Anemia, Bull. Johns Hopkins Hosp. **43**: 398 (Dec.) 1928.
    (*k*) Sydenstricker, V. P.; Mulherin, W. A., and Houseal, R. W.: Sickle Cell Anemia: Report of Two Cases in Children, with Necropsy in One Case, Am. J. Dis. Child. **26**: 132 (Aug.) 1923.
    (*l*) Steinberg, B.: Sickle Cell Anemia, Arch. Path. **9**: 876 (April) 1930.
    (*m*) Wollstein, M., and Kreidel, K. V.: Sickle Cell Anemia, Am. J. Dis. Child. **36**: 998 (Nov.) 1928.
    (*n*) Yater, W. M., and Mollari, M.: The Pathology of Sickle Cell Anemia, J. A. M. A. **96**: 1671 (May 16) 1931.
    (*o*) Cook, W. C.: A Case of Sickle Cell Anemia with Associated Subarachnoid Hemorrhage, J. Med. **11**: 541 (Dec.) 1930.
    (*p*) Sydenstricker (footnote 2).
    (*q*) Stewart (footnote 5).
11. Steinberg (footnote 10 *l*).
12. Landon and Lyman (footnote 10 *i*).

frequently shows light red or yellow spots which prove to be infarcts. On microscopic examination the characteristic picture is seen. The malpighian bodies are greatly diminished in size, are fibrotic and may not show germinal centers. The sinuses about the corpuscles are dilated and distended with red cells so that the corpuscles appear to be swimming in a pool of blood. Rice [13] believes that this is a congenital malformation of the splenic sinuses and suggests such a cause for the disease. The pulp is usually invaded by red cells and may be either swollen or atrophic and fibrotic, according to the size of the spleen. Large numbers of sickle cells are seen.

The liver is practically always enlarged. The parenchyma shows moderate albuminous or fatty degeneration, and the sinusoids are dilated. Quantities of sickle cells are present, though not so many as in the spleen. Some observers [14] have noted phagocytosis of sickle cells by the Kupffer cells. The cells lining the sinusoids may show hemosiderin pigment.

The long bones show hyperplasia of the marrow. The inner half of the cortex has been found honeycombed by marrow interspersed with bony trabeculations. An unusual number of nucleated red cells are found; nucleated sickle cells are frequently seen. In general, there is evidence of hyperactivity of the bone marrow.

The lymph glands are generally enlarged, but microscopic examination does not reveal any characteristic changes. The ulcers of the legs show nothing of special interest.

MECHANISM OF SICKLING

In view of the fact that both nucleated and reticulated sickle cells have been reported by several observers, it appears fairly certain that the transition of the red cells to the sickle shape occurs early in their development. The factors that influence this transition have been the subject of a great deal of investigation, which has led to varying conclusions.

Hahn and Gillespie [15] were able to produce sickling immediately by saturating a suspension of cells from a patient with sickle cell anemia with carbon dioxide, and, to reverse the process, to recover round cells by saturation with oxygen. This led to the theory of anoxemia as a cause of sickling.

Scriver and Waugh [16] applied this theory to a living patient. They effected venous stasis in an arm by a tight Esmarch bandage and found a decreased percentage (23 per cent) of oxygen in the blood and saw sickling of 95 per cent of the cells. Under conditions of optimum circulation, produced by massage and hot water, they found an increased oxygen concentration (62.5 per cent) and only 5 per cent sickle cells. This experiment in vivo correlates perfectly with Hahn and Gillespie's experiment in vitro.

On the other hand, in a study of seventy-seven tuberculous patients, three of whom showed the sickle cell trait and one active sickle cell anemia, Dolgopol and Stitt [17] failed to find any relationship between the degree of anoxemia and the severity of the disease. Moreover, Graham and McCarty,[18] under anaerobic conditions, withdrew blood from the right auricle of the heart twenty-seven hours after death, when anoxemia should have been extreme, and found no more sickle cells than had been present during life.

A number of other theories [19] have been advanced, but the actual mechanism is still in question.

SYMPTOMATOLOGY

The history elicited from a patient with sickle cell anemia, while suggestive, is by no means diagnostic. The patient is usually presented for examination because of weakness, easy fatigability, shortness of breath or "general run-down condition." If one of the acute exacerbations characteristic of the disease is in progress, there may be severe abdominal pain with nausea and vomiting; the syndrome may suggest acute rheumatic fever, with joint pains, a temperature from 101 to 103 F. and leukocytosis. In the absence of these acute manifestations of the disease, a history of one or more such attacks can usually be obtained. The informant will explain that the patient has been weak and sickly all of his life, and that the common diseases of childhood were unusually severe. There will be a history of frequent colds, tonsillitis and possibly pneumonia or tuberculosis. As a matter of fact, the disease is often discovered while the patient is being treated for some respiratory infection.

On physical examination, the patient is found to be rather small for his age and undernourished. Anemic pallor, of course, is obscured by the skin of the Negro, but it is quite evident in the conjunctivae and oral mucous membranes of these patients. The sclerae are almost always found to be jaundiced or to have a pale greenish appearance.

The tonsils are usually diseased, and there is a more or less generalized enlargement of the lymph glands. This adenopathy is most evident in the cervical and axillary lymph nodes which drain the troublesome respiratory tract.

Cardiac enlargement is present in about one half of the cases. Sickle cell anemia is sometimes associated with rheumatic heart disease, but by no means often enough to explain the cardiac hypertrophy on that basis. Analysis of the reported cases shows that, more often than not, the rheumatoid symptoms and enlarged heart occur independently of each other. In most instances there is a soft systolic murmur at the apex, not transmitted, which is explained by the anemia.

Examination of the lungs often shows some degree of congestion. This is considered secondary to the disease, but it is mentioned to emphasize the importance of pulmonary complications.

The abdomen may be tender during an exacerbation, but the pain and tenderness are seldom localized. The liver is enlarged in about one half of the cases, the edge being felt two or three fingerbreadths below the costal margin. The spleen is usually enlarged in patients under 4 years of age, but it is seldom palpable in patients older than 7 years. In babies it is often enormously hypertrophied, reaching the iliac crest, and may be quite tender. An enlarged spleen diminishes in size during a remission of the acute symptoms.

In some of the patients past the age of puberty, evidence of retarded sexual development is seen. Scanty or absent pubic and axillary hair may be noted,

13. Rice (footnote 10 *j*).
14. Jaffé (footnote 10 *h*). Wollstein and Kreidel (footnote 10 *m*).
15. Hahn (footnote 10 *f*). Hahn and Gillespie (footnote 10 *g*).
16. Scriver, J. B., and Waugh, T. R.: Studies on a Case of Sickle Cell Anemia, Canad. M. A. J. **23**: 375 (Sept.) 1930.
17. Dolgopol, V. B., and Stitt, R. H.: The Sickle-Cell Phenomenon in Tuberculosis Patients, Am. Rev. Tuberc. **19**: 454 (April) 1929.
18. Graham, G. S., and McCarty, S. H.: Sickle Cell (Meniscocytic) Anemia, South. M. J. **23**: 598 (July) 1930.
19. Emmel, V. E.: A Study of the Erythrocytes in a Case of Severe Anemia with Elongated and Sickle Shaped Red Blood Corpuscles, Arch. Int. Med. **20**: 586 (Oct.) 1917. Fradkin, W. Z., and Schwartz, L. S.: Sickle Cell Anemia, J. Lab. & Clin. Med. **15**: 519 (March) 1930. Graham, G. S., and McCarty, S. H.: Notes on Sickle Cell Anemia, J. Lab. & Clin. Med. **12**: 536 (March) 1927. Josepha, H. W.: Sickle-Cell Anemia, Bull. Johns Hopkins Hosp. **40**: 77 (Feb.) 1927.

and cryptorchidism is occasionally found. Patients who showed these findings were otherwise generally underdeveloped.

Chronic ulcers of the legs are almost universal among the adolescent and adult patients, but seldom occur in the younger ones. Only two cases of ulcer have been reported in patients under 16 years, while practically all patients of 16 or over have shown either active ulcers or scars. The ulcers resemble those of syphilis, occurring on the shins and ankles, and having a punched-out appearance.

Laboratory examination of the blood shows marked anemia, an average red cell count around 2,500,000 and a corresponding hemoglobin from 40 to 50 per cent. In severe cases the count drops below 1,000,000, and the hemoglobin may be from 10 to 12 per cent. The white blood count is usually from 11,000 to 12,000, even in the absence of infection; the differential count shows an increase in neutrophils. Varying degrees of anisocytosis and poikilocytosis are noted in the stained smear, and infrequent sickle cells are seen. Nucleated red cells are found, and there is an increase in reticulocytes. The red cells show an increase in resistance to hemolysis. The van den Bergh test is occasionally positive in the direct phase and almost always positive in the indirect phase. Urobilinuria is noted in many cases.

As was mentioned, sickle cells are seen but infrequently on stained slides. The characteristic and diagnostic shape of the cells is brought out by sealing a drop of blood between a slide and a thin cover slip. Petrolatum was first used,[20] but later cedar immersion oil was found to be more convenient for sealing the cover slip. The preparation is incubated at room temperature for twenty-four hours. Sickle cells appear after from one to four hours and become increasingly numerous, reaching from 60 to 100 per cent by the end of twenty-four hours. The cells are elongated and crescentic, with threadlike processes extending from the tips. If the preparation is preserved for from four to six days, the cells are seen to have reverted to the normal round shape.

DIAGNOSIS

The diagnosis is based on the characteristic appearance of the red cells, the presence of anemia and the evidence of jaundice. There are only two conditions that need to be considered in the differential diagnosis.

The sickle cell trait exists in about 7 per cent of normal healthy Negroes. Blood from these subjects shows sickle cells in the same manner as that from patients with sickle cell anemia, but there is no anemia or any other abnormal characteristic. The sickle cell trait produces no symptoms and is not incompatible with long life; it has never been known to develop into sickle cell anemia.

There is another condition, which has been called Dresbach's syndrome,[21] in which elliptic cells roughly resembling sickle cells are found in the blood of normal subjects. No symptoms are produced by this condition. The number of abnormal cells is not increased in a sealed preparation, thereby differing from sickle cell anemia.

The simplicity and conclusiveness of the sealed preparation as a method of diagnosis makes it advisable for use. Every Negro with anemia, jaundice or other suggestive signs should be studied for sickle cell anemia, and in white people the disease should be considered as a possible diagnosis in cases of unexplained anemia.

20. Emmel (footnote 19, first reference).

21. Ward, G.: Anemias of the Hemolytic Jaundice Group, Proc. Roy. Soc. Med. **13**: 1 (Nov.) 1919.

TREATMENT

As yet, no satisfactory method of treatment has been found. General measures for building up the body resistance are in order, and stimulants to the blood-forming organs have value. Some patients have been relieved of all symptoms by liver diet, while others have not been benefited. Transfusions have only a temporary effect. Splenectomy has been advocated, and several such operations have been performed. The operation was usually followed by a period of improvement, but in half of the cases the anemia recurred after a few months. The removal of an enlarged spleen appears to be more beneficial than the removal of a small spleen.

Frequency of Occurrence of Signs and Symptoms of Sickle Cell Anemia [22]

	Per Cent
Symptoms:	
Abdominal pain	55
Joint pain	51
Weakness	41
Vomiting	28
Physical Signs:	
Greenish-yellow sclera	78
Heart murmur	75
Adenopathy	55
Enlarged liver	53
Enlarged heart	48
Pathologic changes in lung	39
Ulcer or scar of leg	39
Fever	33
Enlarged spleen	30
Infantile genitalia	17
Laboratory Results:	
Fragility decreased (68 per cent of the 35 cases in which fragility was determined)	68
Nucleated red cells present	57
Indirect van den Bergh positive	55
Urobilinuria	42
Direct van den Bergh positive	12

PROGNOSIS

Between the acute phases of the disease are periods of one to two years during which the patient feels fairly well and is able to carry on the usual routine of life, though he is seldom able to perform heavy work.

22. Data assembled from cases reported in footnotes 1, 3, 4, 5, 7, 8, 10 *a*, *c*, *d*, *e*, *f*, *g*, *h*, *i*, *k*, *m*, *n* and *o*; 16, 17, 19 (second reference) and the following:

Alden, H. S.: Sickle Cell Anemia: Report of Two Cases from Ohio Illustrating Its Hemolytic Nature, Am. J. M. Sc. **173**: 168 (Feb.) 1927.

Anderson, H. B.: Sickle-Cell Anemia: Report of an Active Case, Am. J. M. Sc. **171**: 641 (May) 1926.

Browne, E. Z.: Sickle-Cell Anemia, M. Clin. North America **9**: 1191 (Jan.) 1926.

Cook, J. E., and Meyer, J.: Severe Anemia with Remarkable Elongated and Sickle Shaped Red Blood Cells and Chronic Leg Ulcer, Arch. Int. Med. **16**: 644 (Oct.) 1915.

Cooley, T. B., and Lee, P.: The Sickle Phenomenon, Am. J. Dis. Child. **32**: 334 (Sept.) 1926.

Dreyfoos, M.: Sickle Cell Anemia, Arch. Pediat. **43**: 437 (July) 1926.

Hamilton, J. F.: A Case of Sickle Cell Anemia, U. S. Vet. Bur. M. Bull. **2**: 497 (May) 1926.

Sydenstricker, V. P.: Sickle Cell Anemia, M. Clin. North America **12**: 1451 (March) 1929.

Jamison, S. C.: Sickle Cell Anemia, South. M. J. **18**: 795 (Nov.) 1925.

Levy, Joseph: Sicklemia, Ann. Int. Med. **3**: 47 (July) 1929.

Mason, V. R.: Sickle Cell Anemia, J. A. M. A. **79**: 1318 (Oct. 14) 1922.

Milliken, G.: A Case of Active Sickle Cell Anemia, M. Rec. & Ann. **22**: 49 (March) 1928.

Moore, S.: The Bone Changes in Sickle Cell Anemia with Note on Similar Changes Observed in the Skulls of Ancient Mayan Indians, J. Missouri M. A. **26**: 561 (Nov.) 1929.

Smith, J. H., Jr.: Sickle Cell Anemia, M. Clin. North America **11**: 1171 (March) 1928.

Steinfield, E., and Klauder, J. V.: Sickle-Cell Anemia, M. Clin. North America **10**: 1561 (May) 1927.

Washburn, R. E.: Peculiar Elongated and Sickle-Shaped Red Blood Corpuscles in a Case of Severe Anemia, Virginia M. Semi-Monthly **15**: 490 (Feb. 10) 1911.

Moser, R. A., and Shaw, W. J.: Sickle Cell Anemia in the Northern Negro, J. A. M. A. **84**: 507 (Feb. 14) 1925.

Miles, W. G.: Sickle Cell Anemia; Report of Two Cases, J. Florida M. A. **17**: 374 (Feb.) 1931.

The patient may survive a number of acute exacerbations, but owing to his decreased resistance, he is a prey to the various infectious diseases, and usually succumbs to one of these. Few patients live beyond the age of 35 years.

ABSTRACT OF DISCUSSION

DR. GEORGE S. GRAHAM, Birmingham, Ala.: There has been a good deal of difficulty in establishing a satisfactory definition of the disease "sickle cell anemia." The difficulty arises particularly from the fact that too many normal people exhibit the peculiar deformability of the red cells that has given the disease its name. While from 7 to 8 per cent of all Negroes show this erythrocytic abnormality, only an occasional individual suffers an associated anemia of disabling grade. Sydenstricker recognized the problem and suggested that the disease may exist in a latent as contrasted with an active form. Similarly, the deformity might be considered merely as an indication of some peculiarity of the red cell or of the blood as a whole, while the term "sickle cell anemia" might be reserved for those cases that show definite evidence of disease. Given the peculiar red cell quality as an inherited trait, it is probable that in any particular individual the subsequent course of evidents will depend on accessory factors that are not as yet understood. The red cells as seen in the centrifuge tube or in fresh preparations under the microscope appear soft and pliable and have a viscous, sticky quality. This and other considerations have led to the belief that the deformity is purely a physical phenomenon rather than one dependent on particular conditions of hemoglobin combination, as has been hypothecated by others. I am in agreement with Drs. Anderson and Ware in finding that the cells exhibit an increased resistance to hypotonic salt solutions. However, there can be no doubt that within the body they suffer an accelerated rate of hemolysis. The evidence for this is found quite regularly in the active phases of the disease and is demonstrable post mortem even in the organs of nonanemic individuals, in whom deposits of hemosiderin are found in the renal epithelium and in the reticulo-endothelial cells, particularly those of the liver and lymph nodes. Differential diagnosis is important. The abdominal pain, leukocytosis and fever typical of the crises that are seen in anemic subjects may suggest acute abdominal disease. The associated jaundice may simulate that of cholecystitis. I have seen two cases in which the acute abdominal symptoms had led to the removal of normal appendixes. Here is perhaps the most practical aspect of the whole problem, and it should be emphasized that in dealing with the Negro patient one should always keep the disease in mind.

DR. THOMAS B. COOLEY, Detroit: This is a disease of childhood. The earliest reports led one to think that it was about as frequent and as important in adults as in children. Obviously, from further study, that is not the case. I have an idea of the reason for this somewhat different from the one given by the authors. Drs. Anderson and Ware think that most of the patients die before they reach adult life. I have not watched my patients to adult life, but I have the impression that there is a tendency to improvement—toward what may be called a "compensated" state, such as one sees in hemolytic icterus. How correct that impression is I am not sure, but I have a number of patients who are having less trouble now than they did; fewer hemolytic crises and few abdominal and joint pains. So I am inclined to believe that there may be a natural tendency to improve. None of the patients that I have lost have died of actual effects of sickle cell anemia. One died of tuberculosis, another of endocarditis and a third of a surgical accident. The others, so far as I know, are all living. I want to call attention again to the general similarity of this disease to congenital hemolytic icterus. With regard to the question of latency, those who are familiar with Gänsslen's studies of hemolytic icterus will remember that a large number of the persons he investigated in affected families showed one or more of the recognized characteristics without ever having the hemolytic anemia itself. It seems to me that there is a close analogy there with sickle cell anemia. There are three main symptoms in sickle cell anemia which call for treatment, if one can do anything to relieve them. The first is the hemolytic crises, which occur, as a rule, in connection with acute infections, and in the course of which the blood is likely to drop to a pretty low level. Temporarily, the patients are easily handled by transfusion, and that is the obvious immediate treatment. As for prevention, the feeding of iron or liver does no good. Of course, the removal of probable sources of infection, such as diseased tonsils, and the treatment of infected sinuses may help, but on the whole I have found nothing definitely protective in any of these things. I do think that I have seen a lessening of the hemolytic crises and more of a tendency to reach a compensated state after splenectomy. From this point of view the operation seems worth while. The other two things of main importance in the symptomatology are the abdominal and joint crises. The abdominal pains seem to be due to splenic thrombosis. If the spleen is removed shortly after one of these crises, it will be found to show infarcts due to thrombosis, which may be very large. I don't think the joint pains are of the arthritic type. I should like to be able to relate them to the thrombotic process. They are not relieved at all by antiarthritic measures. They are liable to occur in the patients who have the splenic crises, and often at about the same time. In the two cases in which I have tried it, they seemed to be relieved as definitely by splenectomy as were the abdominal pains.

THE INCIDENCE OF CARCINOMA IN CERTAIN CHRONIC ULCERATING LESIONS OF THE STOMACH

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The successful treatment of carcinoma by any method available at the present time seems to depend more on early diagnosis than on any other single factor; carcinoma of the stomach is no exception to this general rule. Through the efforts of the Society for the Control of Cancer and the medical profession in general, the public is being educated to the necessity of early diagnosis and treatment. Patients are appearing at clinics with a much earlier stage of the disease than formerly, and the responsibility for correct diagnosis is becoming increasingly greater as well as more difficult.

Among the problems that arise, perhaps one of the most difficult is the determination of the benign or malignant character of chronic gastric ulcerations. While it is true that the diagnosis is comparatively easy either by the roentgen rays or by examination on the operating table in well developed cases, it is also true that in the earlier and less well defined cases the differentiation is often impossible by either method. Numerous cases are cited in which mistakes have been made by both surgeons and pathologists, and the correct diagnoses were not established until serial sections and microscopic studies of the ulcer-bearing areas had been carried out. In these early cases the clinical history may be of little value in the differential diagnosis. Analysis of the gastric contents may be the same in either case. A response to ulcer treatment may also be misleading. Patients with early malignant ulcers often do well for a time on an ulcer regimen, and the lesion itself may appear to get smaller as shown by roentgen studies. The time lost in carrying out such a procedure is also a definite risk if the lesion proves to be malignant. In an attempt to solve this problem it occurred to one of us (A. O. H.) that the location of

From the Massachusetts General Hospital.
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the ulcer-bearing area might be of considerable importance in the differential diagnosis.

In general, authors of textbooks and the medical literature pass over this subject with the statement that benign gastric ulcers are chiefly found in the lower third, along the lesser curvature, and that a large percentage of these ulcers are within the duodenum and pyloric valve. A few pathologists and roentgenologists, however, have studied this subject more carefully and have attempted to localize the areas within the stomach in which benign ulcers or carcinomas are more likely to be found.

Orator [1] studied 330 cases of gastric ulcers obtained from Eiselberg's clinic; his conclusions are based on the gross appearance and the histologic examination. Of the total of 330 ulcers, 300 were in the middle third of the stomach near the lesser curvature, and 30 were in the prepyloric region. When studied histologically, 6 of the 300 ulcers on the lesser curvature and 15 of the prepyloric ulcers showed evidence of malignant degeneration; 15 others were questionable. Orator does not state clearly the position of this questionable group. There were no benign ulcers on the greater curvature or in the fundus of the stomach.

Lehmann examined the stomach and duodenum in 1,000 cases at autopsy for signs of active or healed ulcers. Ulcers, or the scars from ulcers, were found in 202 cases. In the stomach the relation of scar to active ulcers was as 9 to 1; the number of active ulcerations increased as the pylorus was approached. By far the greater number of scars were located toward the cardiac end of the stomach. Seventy-one per cent of active ulcers were observed in the region of the lesser curvature of the stomach. Not a single instance of benign ulcer was observed on the greater curvature.

Haudek,[2] reviewing his experience of many years in the roentgen diagnosis of gastric lesions, recognized the difficulty in distinguishing between benign and malignant lesions in the prepyloric region. The prepyloric region, he stated, is the most frequent site of cancer; about 80 per cent of carcinomas start there. Ulcers are certainly less commonly found in this area, occurring in about the proportion of 1 to 10 as compared with ulcers in the pars media. He further stated that a considerable percentage of these ulcers degenerate and become malignant; about one third of the prepyloric ulcers undergo this change, while only 3 per cent of the ulcers of the pars media do so. He concluded that the difficulty in differential diagnosis with the tendency to malignant degeneration is sufficient reason for recommending operation in all prepyloric ulcerations.

Sproull,[3] in a careful review of the literature, was able to find only 10 proved cases of benign chronic ulcerations on the greater curvature. More than half of the cases reported either were not proved histologically, or on examination were found to be malignant. He concluded that no lesion of the greater curvature should be treated by medical measures, no matter how small the lesion or how closely the clinical and roentgen findings may simulate benign ulcer, for the chance that it is not benign is so great that one will be almost surely missing the opportunity to remove an early cancer.

Dresser [4] quoted Lehmann and referred to the frequency with which benign ulcer occurs on the lesser curvature of the stomach.

Camp,[5] in a summary of the facts concerning prepyloric ulcer obtained from the literature and from the material at the Mayo Clinic, stated that it is apparent that the roentgenologic simulants of this lesion are numerous and far more common than prepyloric ulcer itself, and he advised withholding a diagnosis unless an ulcer niche can be demonstrated without question.

Stone and Ruggles [6] have also studied the cause of deformity of the prepyloric region and have noted the frequency with which these lesions are found to be malignant. They reported 1 case of proved benign prepyloric ulcer.

In general, it may be stated that those authors who have studied the location of benign and malignant gastric ulcerations agree that there are definite ulcer-bearing areas and that these areas are along the middle third of the lesser curvature, at the pyloric valve and in the duodenal bulb. There also seems to be general agreement that carcinoma may occur anywhere in the stomach, that it is most frequently found in the prepyloric region, and that it rarely involves the duodenal bulb. In the early diagnosis of a gastric carcinoma the prepyloric region is particularly important since a lesion occurring in this area gives symptoms early, and these patients are likely to report for observation at a time when a cure is possible. Carcinomatous lesions occurring in other parts of the stomach may be symptomless until the lesion is well developed. The operative procedure is also simpler when the lesion occurs near the pylorus than in other parts of the stomach. The early correct diagnosis of these prepyloric lesions is, therefore, of special importance.

Diagram of the stomach, showing the anatomic divisions we have selected and the areas in which benign ulcers usually occur. Prepyloric ulcers as discussed in this paper occur within the antrum and do not involve the pyloric ring. Malignant ulcerations may occur anywhere in the stomach. The shaded areas indicate the position of benign ulcerations.

Before taking up the discussion of our material it is perhaps well to state definitely what we understand by the term "prepyloric region." As we understand it and as it is referred to in this paper, it is that portion of the stomach which forms the pyloric antrum and which, as the peristaltic waves pass over the stomach, forms a canal about 1 inch (2.5 cm.) in length just to the gastric side of the pylorus (see the accompanying figure).

1. Orator, V.: Zur Pathologie und Genese des Carcinoms und Ulcuscarcinoms des Magens, Virchows Arch. f. path. Anat. **256**: 202, 1925.
2. Haudek, M.: Observations on X Rays in the Diagnosis of Early Carcinoma of the Stomach, British J. Radiol. **2**: 421 (Sept.) 1929.
3. Sproull, J.: A Discussion of the Occurrence of Benign Ulcer on the Greater Curvature, Am. J. Roentgenol. **25**: 464 (April) 1931.
4. Dresser, R.: The Roentgen Examination for Peptic Ulcer, with Special Reference to Those Cases Presenting Unusual Difficulties in Diagnosis, New England J. Med. **205**: 395 (Aug. 20) 1931.
5. Camp, J. D.: The Roentgenologic Significance of Pyloric and Prepyloric Deformities, Radiology **16**: 847 (June) 1931.
6. Stone, R. S., and Ruggles, H. E.: The Diagnostic Value of Prepyloric and Pyloric Roentgen Findings, Am. J. Roentgenol. **27**: 193 (Feb.) 1932.

The material we wish to present is based on a study of the records of the Massachusetts General Hospital during the past ten years and includes the combined roentgen, surgical and pathologic reports. It is rather disappointing that of this large amount of material only 128 records of benign gastric ulcerations were obtained in which all of the data were complete. It is only during the last three years that sufficient attention has been given to the localization of ulcerating lesions. Of these 128 benign gastric ulcerations, 83

TABLE 1.—*Location of Ulcer of Stomach (Roentgen, Surgical and Pathologic)*

	Number	Per Cent
Location (?)	9	8.0
Pylorus	28	21.9
Near pylorus	6	4.6
Prepyloric	2	1.5
Media	83	74.0
Total	128	100

were in the media close to the lesser curvature, 28 at the pylorus, "6 near the pylorus" and 2 in the prepyloric region; in 9 cases the location was in doubt. (table 1).

We have also studied the material for the years 1928 and 1929, based on roentgen examination alone. In these two years there were 128 benign gastric ulcerations and 121 gastric carcinomas. The location is as follows (table 2): Of the ulcers, 39 occurred in the pylorus, 6 in the prepyloric region, 80 in the midportion of the stomach and 3 in the cardiac region. Of the carcinomas, 75 occurred in the prepyloric and pyloric regions, 7 in the midportion of the stomach and 21 in the cardia; 8 were classified as diffuse. The relative proportion of benign to malignant prepyloric ulcerations was approximately 1 to 12. In the first group studied there were 8 cases each of which at operation showed a lesion near the pylorus in the prepyloric region which was diagnosed at operation as a benign ulceration and in which a gastro-enterostomy was done. Follow-up of these cases has shown that the diagnosis was incorrect in every case, the correct diagnosis being carcinoma (table 3).

TABLE 2.—*Location of Ulcer and Carcinoma; Roentgen Diagnosis (1928 and 1929)* *

	Ulcer	Carcinoma
Pyloric end (pylorus)	39	75
(prepyloric)	6	
Media	80	17
Cardia	3(?)	21
Diffuse	0	8
Total	128	121

* Relative proportion of prepyloric ulcer to carcinoma approximately 1 to 12.

SUMMARY

From a study of the literature and of our own cases we believe that it is fair to state that any chronic, indurated, ulcerating lesion occurring in the pyloric antrum within 1 inch of the pylorus, but without involving the pylorus, should be considered malignant until proved to be otherwise, and that proof of the absence of malignancy in such lesions is obtained only by serial section and careful microscopic examination. It is not safe to interpret such lesions as benign from roentgen examination alone or from observation on the operating table. Given a case presenting such a lesion in the prepyloric area, it is probably safer and wiser to treat the lesion by wide surgical removal than by medical or palliative treatment. The same is true of all chronic, indurated, ulcerating lesions occurring on the greater curvature and probably with most lesions occurring in the cardiac end of the stomach. The benign, chronic, indurated, peptic ulcer occurs on the lesser curvature above the antrum or in the region of the pyloric valve. Accurate localization of these lesions is of the greatest importance, but is sometimes difficult; foreshortening of the shadow of the stomach on the x-ray film may make the niche of the ulcer appear closer to the pyloric opening than it actually is. Careful fluoroscopic observation or films taken at various angles should obviate this error. Large ulcers occurring low on the lesser curvature may extend into the region of the antrum; similar ulcers arising in the region of the pyloric valve may extend into the stomach. They should not be classified as prepyloric ulcers.

In this presentation we have purposely avoided a discussion of the various roentgen findings which help to differentiate benign from malignant ulcerations, other than position. They are all important, and all facts, including those obtained from the history and physical examination, should be considered in the final diagnosis.

TABLE 3.—*The Roentgen, Operative and Follow-Up Diagnosis in Eight Selected Cases of Prepyloric Ulcer*

Hospital Number	Roentgen Findings	Operative Findings	Final Diagnosis
283365	Gastric ulcer at the prepylorus (?); malignancy	Gastric ulcer on the lesser curvature 3 cm. above the pylorus (1927)	Tumor involving the pyloric end (1929), adenocarcinoma, removed; operative and pathologic diagnosis
273408	Obstruction at the outlet; probably malignant	Ulcer on the gastric side of pylorus (1925)	Operative findings, 1929; carcinoma, inoperable
272829	Obstruction at the outlet of the stomach	Thickening exactly at pylorus with ulcer above it (1925)	Roentgen and clinical findings, obvious carcinoma; patient died in January, 1927
262864	Obstruction at the pylorus	Lesion on the lesser curvature which ended abruptly at the pylorus; old callus ulcer (1924)	No operation; definite carcinoma; roentgen and clinical findings
481562	Obstruction at the pylorus, probably ulcer	Indurated lesion near the pylorus (1922)	Carcinoma lower third, 1923; adenocarcinoma operative and pathologic findings
461562	Ulcer near the pylorus	Benign ulcer (1926)	Mass head of pancreas and large ulcer just above pylorus; malignant condition seemed certain (1927); operation
253091	Obstruction at the pylorus, probably ulcer	Ulcer above the pylorus (1921)	Enlarged liver, jaundice; roentgen diagnosis: carcinoma of the stomach (1922)
250411	None	Gastric ulcer (1920)	Palpable mass, obvious carcinoma (1922)

ABSTRACT OF DISCUSSION

DR. JOHN D. CAMP, Rochester, Minn.: It has been repeated here several times today that the roentgenologic distinction between gastric ulcer and carcinoma in most instances is quite easily accomplished; I think all will agree that this is probably true. Efforts are continually being made to improve the technic so as to diagnose operable malignant lesions of the stomach earlier, but in early cases differential diagnosis is more difficult and it is in this group that the information which the authors have presented will be found of considerable help. I should like to speak particularly of the lesions in the antrum

of the stomach to which the authors have referred. When one considers these, one finds among them 66 per cent of all gastric cancers, 69 per cent of all benign neoplasms of the stomach, and only 10 per cent of benign gastric ulcers. Since benign gastric ulcers in the antrum are comparatively rare, one must agree with the authors that a chronic ulcerating lesion in this region should be considered malignant until proved otherwise. The antrum is a favorite site of spasm referred from a gastric ulcer situated higher up on the lesser curvature or elsewhere in the stomach, and too frequently the spasm produces a rather marked six hour gastric retention, which may obscure the fundamental lesion and lead one to think one is dealing with a definite obstructing pyloric lesion. Early malignancy in the antrum may be obscured by the resultant stasis of barium, secretion and food remnants. Even when a pyloric lesion seems certain, the accuracy of the roentgenologic examination can be considerably enhanced if, in cases presenting obstruction, lavage is done before the roentgenoscopic examination. The differentiation between gastric ulcer and cancer cannot be accomplished in all cases. We must remember that as roentgenologists we are dependent solely on what we can see and when more than one disease may produce grossly the same pathologic picture, the decision must be left to the clinician, the surgeon and the pathologist.

DR. FRANK SMITHIES, Chicago: I am rather surprised at the statement that the literature contains very little reference to the location of gastric ulcer with respect to gastric cancer. While I thoroughly agree with the authors in their general conclusions, I wonder how they came to overlook the careful tabulations which the late Dr. A. J. Ochsner and I placed in our book "Cancer of the Stomach."

DR. MARTIN E. REHFUSS, Philadelphia: As I see it, the question of peptic ulcer involves three factors. The first factor I would call an *x* factor because it is an unknown one. The second is the question of acid and pepsin, not acid alone, but pepsin. The third is a neuromuscular mechanism concerning which relatively little is known but of which a great deal is beginning to be learned. Dr. Cole gave as beautiful an elucidation of the question of gastric ulcer as I know of and he made a statement which we as clinicians can absolutely subscribe to and that is that gastric ulcer disappears with great rapidity. There has been a strong tendency to pass over today the distinction between gastric and duodenal ulcer. I have seen gastric ulcer on the lesser curvature and on the posterior wall disappear in two weeks, but I have seen it recur in a year on a number of occasions; therefore to assume that it is latent and disappears after treatment is a serious matter. There are three people I knew who paid the penalty for this assumption. Duodenal ulcer is an altogether different story. It is a disease which in the first hundred cases of my associates and me showed about 78 per cent of high acid figures. Moynihan reported 72 per cent of high acid in this group. Duodenal ulcer occurs in a little thin walled cap in 95 per cent of the cases, and the danger of duodenal ulcer is obviously greater from the standpoint of perforation. As to the etiology, one point that was not brought forward was infection. I think that is important because of the seasonal incidence and the studies of Duval; and the exacerbations of the disease suggest that; nevertheless, there are many points in the *x* factor, toxemia, allergy, heredity, and all those things that make an ulcer possible. With regard to the acid stage I disagree with Dr. Cole. I will look at his beautiful lantern slides and accept them. I will look at the elucidation of the pathologic changes in ulcer. I have never seen anything better; but he must present the figures on acid before I will accept that statement. I spent seventeen years studying the acidity of the stomach and I know that human beings belong in groups. One group presents a rather high acidity and, barring accidents and influenza and typhoid and age, they maintain that type of acidity throughout the greater part of their lives. I have records which go over fifteen years of gastric analyses that were made. Therefore I say that this acid factor is and must be a factor in the evolution of ulcer, because all the concrete testimony, surgical and medical, shows that it plays a rôle. This is one point the surgeon is fighting. He measures his effect not only by disappearance of ulcer but also by the control of acidity, and he gets the marginal type when the secretory mechanism is not controlled. I believe what Dr. Cole has said about gastric ulcer. If the patients are put to bed on a proper dietary, the big craters will disappear. Nevertheless I insist on roentgen control.

DR. LEWIS GREGORY COLE, New York: I almost always agree with Dr. Holmes in problems of general roentgenologic diagnosis and roentgenologic therapeutics, but in gastro-intestinal diagnosis, in which our technic is radically different, our interpretation of the observations, and particularly our application of these observations to the many problems in gastro-enterology, often are at variance, and this presentation is no exception. The authors conveyed the idea that organic ulcerative lesions of the pylorus were malignant and that organic lesions of the lesser curvature above the sulcus were benign and they emphasized this by a schematic drawing of the stomach. The lesser curvature between the sulcus and the esophagus and the entire cap was filled in with black and the pyloric region on both the lesser and greater curvatures was white. I fear that they led the audience to believe that lesions occurring in the white region should be considered malignant and those lesions that occur in the black region should be regarded as nonmalignant. The cap is never the site of malignant tumors and is therefore eliminated from controversy. I feel that gastro-enterologists throughout the country and some roentgenologists with less experience than Drs. Holmes and Hampton will apply this schematic drawing to the solution of the problem of malignant conditions of the stomach. I fear that those less experienced in roentgenology will attempt to apply the schematic sketch of the stomach to the solution of the cancer problem. In my opinion if this statement and sketch were universally accepted as a prime factor in the differential diagnosis of malignant tumors of the stomach it would set back the science of roentgenologic diagnosis of gastro-intestinal lesions by nearly two decades, in fact almost to the period when reports read "There is a filling defect of the stomach which can be proved malignant or nonmalignant only by surgical exploration." In fact, I think it would be worse than this because those inexperienced in interpretation may derive a sense of false security of nonmalignancy in lesions along the lesser curvature and, still worse, be led to innumerable partial gastrectomies for nonmalignant lesions that would heal in a short time under proper medical treatment. If this schematic drawing were accepted I dread to think of the mortality of surgical procedures based on such roentgenologic evidence. The fatalities as a result of operative intervention in nonmalignant pyloric lesions would far exceed the five or even three year cures of gastric ulcer that might result from partial gastrectomy. Moreover, if adequate roentgenologic changes of the pyloric region are intensively studied, the differentiation between malignant and nonmalignant lesions of this region can be made in the vast majority of cases based on a single complete serial examination. In the few cases in which this differential diagnosis cannot be made from a single examination, a subsequent examination in two or three weeks will almost certainly give a differential diagnosis between a benign and a malignant lesion. The benign lesion will improve on rest in bed and the other is less likely to. I am certain that, in my experience, for every malignant organic lesion I could show a slide of a nonmalignant organic ulcerative lesion in the region which the authors have designated as the white area in which only malignant growths occur. I present a series of slides as controverting the fact that ulcerative organic lesions of the pylorus should be considered malignant until proved otherwise by surgical exploration.

DR. GEORGE W. HOLMES, Boston: What Dr. Cole said requires some restatement of my position. I don't agree with him that the surgical results are so bad; perhaps the Boston surgeons are more conservative; I don't feel as he does toward the surgeon. The paper that Dr. Hampton and I have presented has as its object the prevention of just such a situation as Dr. Cole has brought up—the case that he has cited. I don't wish to give the impression that this is the only way of finding out whether a patient has a benign or malignant ulcer, but it is one way of clearing up just such a situation. As to the slides Dr. Cole has shown, we have never stated that benign ulcers did not occur in the prepyloric region, and in the vast material which Dr. Cole has available he can no doubt

find some that are benign; but they are not common. If he will take all the cases he sees in a year and compare the percentage of cases presenting benign ulcer in the prepyloric area with those presenting benign ulcerations on the lesser curvature or in the pyloric region, I feel sure he will agree with us. I do not agree with him on all the slides he has shown. A good many of them were not prepyloric ulcers as I define them. Some were; but in these he did not state whether or not a pathologic diagnosis was made, or the number of sections taken. I will not accept the pathologist's report made from a single section in these cases.

RECENT OBSERVATIONS IN SERUM DISEASE

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It was thought that it might be profitable to study the records of serum disease as observed in the Durand Hospital since its establishment, nineteen years ago, and to discuss in a brief manner some of the pertinent questions.

FREQUENCY

Of the 2,859 patients who received diphtheria antitoxin, 804, or 28.1 per cent, showed serum reactions; of the 876 patients who received scarlet fever antitoxin 198, or 22.7 per cent, showed reactions, and of the 55 patients who received antimeningococcus serum 45, or 81.8 per cent, showed reactions. These figures do not include all of those who received serum but only those patients who were observed for ten days or longer; those who died before ten days or were discharged before that time are not included in the series.

The incidence of serum disease has varied in different reports, and the statistics from hospitals in which considerable numbers of cases have been observed have given the proportion of reactions from 14 to 50 per cent. It seems that the number of reactions may vary with the particular serum, and especially with the amount injected. In hospitals such as the Durand Hospital, where many late and severe cases of diphtheria, including laryngeal cases, are admitted, the amount of antitoxin given is often relatively large and the reactions are correspondingly frequent.

Several factors enter into the determination of the frequency of reactions. One is individual susceptibility, which varies greatly. Another is the toxic element of the horse serum. The opinion has been expressed [1] that the serum of certain horses is more likely to cause serum disease than that of other horses. Fresh serum is, as a rule, more prone to cause reactions than serum that has been preserved for some time. The toxicity of fresh serum decreases rapidly during the first ten days. A slight decrease occurs during the first two months, after which the deterioration is extremely gradual. Besredka found that serum twenty years old produced anaphylactic shock in a sensitized animal. Another factor is the previous introduction of serum. As many patients nowadays receive toxin-antitoxin or other forms of immunization, the percentage of reactions on subsequent serum administration may be numerous. Perhaps the most important factor in determining the occurrence of reaction is the quantity of serum injected. The quantity of serum given in this series in the cases observed for ten days or more is given in table 1. It will be observed that the percentage of reactions increases as the quantity of serum increases. In the series receiving the larger doses, the relatively small number of cases deprives the relative percentages of much value. Of the patients receiving 10 cc. or less of serum, 14.3 per cent gave reactions; of those receiving from 10 to 30 cc., 23.8 per cent gave reactions; of those receiving from 30 to 50 cc., 37 per cent gave reactions; of those receiving from 50 to 100 cc., 44.8 per cent gave reactions, and of those receiving 100 cc., and over, 61.7 per cent gave reactions. The increased frequency of reactions with increased dosage has been mentioned by practically all authors.

Contrary to the opinion of some, the reactions after the injection of scarlet fever antitoxin are not more numerous or more severe than after the use of diphtheria antitoxin. In fact, the frequency of reactions in this series is slightly less, being 22.7 per cent as compared with 28.1 per cent for diphtheria, notwithstanding the fact that many patients with scarlet fever had been immunized with toxin-antitoxin or had had diphtheria antitoxin.

TABLE 1.—*The Frequency of Serum Reactions in Diphtheria Patients Receiving Different Quantities of Refined Diphtheria Antitoxin*

Total Amount of Antitoxic Serum, Cc.	Cases with Reaction	Cases Observed for 10 Days or More Without Reaction	Total Cases	Percentage of Cases Showing Reaction	Percentage of Cases Showing Reaction with Whole Serum[a]
1 - 9	119	634	753	14.3	10.9
10 - 19	140	531	671	20.8	27.5
20 - 29	117	287	404	28.9	28.5
30 - 39	149	245	394	37.8	37.3
40 - 49	54	100	154	35.0	42.2
50 - 59	63	95	158	39.8	48.3
60 - 69	21	35	56	38.5	42.5
70 - 79	58	62	120	48.3	66.6
80 - 89	15	24	39	38.4	40.0
90 - 99	26	13	39	66.6	77.7
100 - 109	11	10	21	52.3	44.4
110 - 119	10	7	17	58.8	75.0
120 - 129	1	0	1	100.0	66.6
130 - 139	4	4	8	50.0	75.0
140 - 149	6	0	6	100.0	66.6
150 - 159	7	6	13	53.8	50.0
160 - 350	3	2	5	60.0	100.0*
	804	2,055	2,859	28.1	34.1

The frequency of reactions in epidemic meningitis is much higher, owing in a great measure to the relatively large doses of serum injected. In a series of fifty-five patients who received antimeningococcus serum, reactions occurred in 50 per cent of those who received from 10 to 50 cc. of serum, in 75 per cent of those who received from 50 to 100 cc., in 85 per cent of those who received from 100 to 200 cc., and in 100 per cent of those who received more than 200 cc. of serum.

When the serum is injected intravenously, the incidence of serum disease rises rapidly and usually takes the form of an immediate reaction. In this series of cases the immediate reaction occurred in 66.6 per cent of the patients who received from 1 to 10 cc., intravenously, in 84.6 per cent of those who received from 10 to 20 cc., and in 90 per cent of those who received from 20 to 30 cc. On account of the severe reactions likely to occur after the intravenous injection of serum, this method of administration should be used only in severe and neglected cases in which inadequate doses of or no antitoxin had been administered before admission.

One gets the impression that the frequency of serum disease occurs less in Negroes than in white people, but no exact study has been made of this question.

While the incidence of the natural allergies increases rapidly in the early age periods, the age incidence of

From the John McCormick Institute for Infectious Diseases.

1. Park, W. H., and Thorne, B.: Am. J. M. Sc. 132: 686 (Nov.) 1906.

serum disease seems not to change during life. This is shown in table 3. The percentage of incidence of serum disease is practically the same for the different age groups.

Much effort has been expended with the purpose of lessening the property of horse serum of inducing serum disease. Rosenau and Anderson [2] stated that refined antitoxic serum, precipitated and dialyzed in accordance with the Gibson method, is quite as toxic, bulk for bulk, as the untreated serum from which it was obtained. Park and Thorne,[1] however, state that the concentrated antitoxin (Atkinson-Banzhaf method) materially reduces the tendency to serum disease. They admit, of course, that the portion of the globulins still accompanying the antitoxin is capable of causing serum disease. In comparing the frequency of serum disease, in an analysis of 692 cases in which whole serum was administered, with the reactions in this series, Weaver [3] found very little difference in the percentage of serum reactions during the years 1906 to 1908. Of the 692 cases observed for ten days or more reported by Weaver, 34.1 per cent presented reactions, while in the 2,859 cases reported in this series 28.1 per cent showed reactions. Be that as it may, the treatment of serum by the various methods of concentration increases its anti-toxic power, and a distinct advantage is obtained, so far as bulk is concerned, for the serum reaction depends partly on the quantity of serum given.

TABLE 2.—*Frequency of Serum Reactions in Scarlet Fever Patients Receiving Different Quantities of Scarlet Fever Antitoxin*

Amount of Serum, Cc.	Therapeutic Doses	Cases Showing Reaction: No History of Previous Administration of Serum	Cases Showing Reaction: History of Previous Administration of Serum	Cases Observed 10 Days or More Without Reaction	Total Cases	Per Cent of Cases Showing Reaction	Percentage of Cases Showing Reaction, Excluding Those with History of Previous Administration of Serum
10-18	1	168	22	638	828	22.3	20.8
20-36	2	7	..	27	34	20.5	
30-54	3	..	..	5	5	0	
50-72	4	..	..	4	4	0	
70-92	5	1	..	4	5	20.0	
		176	22	678	876	22.7	

TABLE 3.—*The Age Incidence of Serum Disease in Scarlet Fever and Diphtheria*

Age in Years	Number of Patients Injected	Number of Cases of Serum Disease	Percentage Incidence of Serum Disease
0 - 4	915	231	22.7
5 - 9	1,291	324	25.0
10 - 14	550	166	30.1
15 - 19	252	76	30.1
20 - 29	474	113	23.8
30 - 39	153	37	24.1
40 - 49	45	12	26.6
50 - 70	15	3	20.0

DAYS ON WHICH REACTIONS OCCURRED

As observed in this series, the interval between the injection and the appearance of the reaction varies from a few minutes to thirty days. Table 4 shows the number of cases falling on the different days. Of the 804 cases with reaction after the injection of diphtheria antitoxin, in 690, or 85.8 per cent, the reaction occurred before the eleventh day. The largest number of reactions fell on the days from the sixth to the eleventh. A reinjection carried out during the normal incubation period following the first injection, that is, within from eight to twelve days, exerts no influence on the incubation period or the frequency or duration of the rash. If the reinjection is given after three weeks following the primary injection, the resulting reaction takes place, on the average, after distinctly shorter incubation than the normal period—the accelerated reaction of Pirquet and Schick.

SYMPTOMS

The ordinary serum disease following a first administration of horse serum is rarely of such severity as to threaten the life of the patient—it is a source of annoyance rather than of danger; but the immediate reaction following a repeated injection or in those who are sensitive to horse serum is apt to be more apprehensive. The symptoms of serum disease following a primary injection of serum are fever, skin eruptions, edema, swelling of the lymph glands, leukopenia and joint pain. These occur in various combinations, one being most prominent in one case, another in another. All may occur in a given case or most may be absent.

TABLE 4.—*The Number of Serum Reactions Falling on Each Day After Injection*

Days	Diphtheria	Scarlet Fever	Epidemic Meningitis
1	58	16	1
2	22	7	
3	21	1	
4	47	3	3
5	83	16	4
6	102	32	8
7	114	31	11
8	88	30	7
9	83	20	8
10	71	12	1
11	61	9	1
12	14	8	1
13	13	3	
14	6	4	
15	4	1	
16	3		
17	2		
18	8	1	
19	2		
20	3	1	
21	?	1	
22			
23			
24	?	1	
25	2	1	
26	1		
27			
28			
29	1		
30			
Total number of cases	804	198	45

In a considerable number of cases the reaction remains local. It was noted in this series and has been reported by others that the local reactions occur earlier than the general, and that they usually run an afebrile course, with little or no general disturbance. Occasionally after a rather early local reaction at the site of the injection of the serum and after an interval of several days, a general reaction occurs. Recurrent attacks of serum disease following a primary injection were observed in several cases and may be explained as separate reactions to the specifically different proteins of the serum. These recurrent attacks occur not only with whole serum but also with refined serum.

The most typical of serum reactions begin with local swelling at the site of the injection, the surrounding skin showing urticarial wheals and erythema. Soon the urticaria becomes general over the body, accompanied by severe itching. Fever often precedes and accompanies the exanthem and sometimes persists after its disappearance. The lymph glands adjacent to the site

2. Rosenau and Anderson: Bull. 36, Hyg. Lab., U. S. P. H. & M. H. S., 1907.
3. Weaver, G. H.: Serum Disease, Arch. Int. Med. **3**: 485 (June) 1909.

of the injection show enlargement and may be tender to the touch, and there may be enlargement of the lymph glands throughout the body. With the general urticaria the patient is restless and irritable or he may be drowsy.

The edema of serum disease usually affects the face and dependent parts of the body. It is especially prominent in the loose tissues of the eyelids, hands and feet, and lips, which may be so swollen as to disfigure the features completely. The urticaria usually disappears as suddenly as it comes, and the fever and general ill feeling usually subside with it. The urticaria is usually of short duration, only occasionally lasting three or four days. In one case of the series the urticaria lasted for five days, in two cases for seven days and in one case eight days. The larger the quantity of serum given, the more severe are the symptoms likely to be, although occasionally a severe reaction occurred after the injection of a small quantity of serum.

The eruption of serum disease is usually urticarial, though it may be scarlatiniform and morbilliform or present the type known as multiform exudative erythema. Next to urticaria, a simple erythema is most common. This may be limited to the skin about the injection, or it may extend over a large part of the body. It is often associated with urticarial lesions. The redness disappears on pressure and is usually transient, lasting from one to three days.

Fever is inconstant. Cases of severe urticaria may run an afebrile course. In many cases there is a prodromal fever for a day preceding the eruption, but more often the fever appears at the same time as the eruption.

Pain in the joints may occur as the only symptom of serum disease, but usually it precedes, accompanies or follows other manifestations. More or less joint symptoms were observed in 24 per cent of the cases of this series. In some the pain was severe and persistent; in others, slight and transient, and in some cases only a stiffness was complained of. The pains are spontaneous, increased by motion and sometimes by touch. After from one to three days the pains disappear, leaving the joints without permanent alteration. Swelling of the joints is unusual. The joints most often involved are those of the hands and the knees, although any of the joints may be involved, and often several are affected simultaneously or in succession.

A slight transient albuminuria may occur, although infrequently. Leukopenia has been noted also. The mucous membranes are usually unaffected but in some cases in this series there was swelling of the tongue and of the lining of the throat. Involvement of the respiratory mucous membrane was observed in several cases, as evidenced by hoarseness and cough. Mucous membranes that have been the seat of the diphtheritic process are more prone to swelling at the time of serum reaction. Such phenomena were observed rather frequently in cases of laryngeal diphtheria. After all the laryngeal symptoms had disappeared for several days, with the onset of the urticaria the children again became very hoarse and croupy, but this was never severe enough to require intubation.

Disturbances of the stomach, as shown by local discomfort, nausea and vomiting, were observed in several cases.

More or less general disturbance accompanies all cases of severe serum reaction. Adults sometimes complain of headache, backache and severe aching in the muscles. In the more severe cases there is a considerable degree of prostration; the pulse is weak and irregular, and the symptoms of shock appear.

A more serious form of serum disease, the so-called immediate reaction of Pirquet and Schick, sometimes occurs in persons who have been rendered hypersensitive by previous injections of serum or in some manner of which we are ignorant. The height of sensitiveness after an injection of serum is reached in two or three months, after which the sensitiveness gradually declines but probably never disappears completely. Accelerated reactions have been observed nine and fourteen years after a primary injection. Following the second injection of serum after the normal incubation period, that is, from eight to twelve days after the first injection, there is occasionally no acceleration of reaction, but, if accelerated, it may be moderately or markedly so, the last being the so-called immediate reaction. Such reactions may be local or general. In the immediate local reaction an intense edema appears at the site of the injection a few minutes or hours after the secondary injection, reaches its height in twenty-four hours, and gradually subsides in from two to five days. Two cases of severe local reaction occurred in this series. One of these is cited to show the intensity which the reaction may assume.

A girl, aged 14, was admitted as having diphtheria and was given 40,000 units of diphtheria antitoxin in the lateral aspect of the right thigh. She had had toxin-antitoxin two years before, and a serum reaction developed with urticaria and edema, on the second day. The reaction subsided within twenty-four hours. Three days after admission and after the serum reaction had subsided, scarlet fever developed, as she had been exposed before admission. On the fourth day after admission she was given one therapeutic dose of scarlet fever antitoxin in the lateral aspect of the right thigh but not at the site of the injection of the diphtheria antitoxin. Within twelve hours the right leg was swollen, edematous, indurated and very painful. The swelling and induration extended for 4 inches above Poupart's ligament and to the ankle. There were small subcutaneous hemorrhages at the site of the injections. With local treatment and epinephrine hypodermically the condition subsided and within eight days there was no evidence of a reaction.

In the local reactions, slight chilliness and fever were often observed. In several cases of the series there was a general immediate reaction, which appeared in from a few minutes to twenty-four hours and, in addition to the usual signs and symptoms of serum disease, was accompanied by severe asthmatic forms of dyspnea, cardiovascular disturbances with cyanosis, collapse, chills, nausea and vomiting, and occasionally renal disturbance including complete suppression of urine for several hours. In this category belong the cases that may prove fatal. However, no deaths have occurred.

If the second injection is given when hypersusceptibility is not marked, as, for example, after a small primary dose or several years after a primary injection, the accelerated reaction is not likely to be immediate but appears in from two to five days. Under these circumstances the reaction may appear as an ordinary case of serum disease or may be more severe.

No case of death that could be ascribed to injected serum occurred in this series. Immediate reactions of more or less severity have occurred in 58 of the 804 cases of serum disease after the injection of diphtheria antitoxin, and in 16 of the 198 cases of serum disease after the injection of scarlet fever antitoxin. Most of these reactions occurred after the intravenous injection of serum. However, careful desensitization is carried out on all patients before serum is given, and epinephrine is usually given at the same time as the serum.

The method of desensitization varies with the individual. If there is no history of previous administration of serum and no history of hives, hay fever or asthma, 5 minims of undiluted serum is given subcutaneously and doubled at thirty minute intervals until 1 cc. has been given. If no symptoms develop with 1 cc. of the undiluted serum, the full dose of antitoxin is given. If there is a history of previous administration of serum or a history of hives, hay fever or asthma, desensitization is carried out by injecting subcutaneously 3 minims (0.3 cc.) of a 1 : 10 dilution of the serum and increasing the amount injected at thirty minute intervals until 1 cc. has been given. Then from 0.5 to 1 cc. of the undiluted serum is given subcutaneously and if no reaction occurs the full dose is given. The time required for desensitization and the amount of serum injected for this purpose depend on the state of hypersensitiveness observed.

TREATMENT

In the treatment of ordinary serum disease, nothing new is offered. Many vain attempts have been made to prevent the occurrence of serum disease by desensitization and other methods. The administration of calcium salts is rational with the purpose of combating the edema. It seems to have little effect in preventing the reaction. Calcium gluconate, 1 drachm and 2 drachms (4 and 8 Gm.) three times a day with additional milk feedings in the morning and afternoon for ten days, was tried in a series of 107 patients who received scarlet fever antitoxin, but the percentage of reactions, 24.3, and the intensity of the reactions were not affected. A series of 98 patients who received diphtheria antitoxin received the same treatment but the percentage of the reactions, 37.9, and the intensity of the reactions were not affected. Intravenous administration of 1 Gm. of calcium gluconate two or three times a day has been tried after the serum reaction developed, and in some cases it seemed to have a tendency to allay the symptoms; in others it was without effect. It is perhaps less efficient in this respect than calcium chloride, the only advantage being the facility with which it is administered. Sodium thiosulphate intravenously has been tried in a small number of cases but without marked benefit. Solution of epinephrine hypodermically will allay the itching and cause the disappearance of the urticarial wheals, but its action lasts for only an hour or two, at which time the symptoms reappear with equal severity. Repeated injections of epinephrine together with morphine have given the best results in alleviating the symptoms. Ephedrine by mouth is much less effective. If collapse occurs, following the administration of serum, the treatment follows the directions indicated in conditions of collapse and shock in general. Hypodermic injections of rapidly diffusible stimulants, such as epinephrine and atropine, the administration of physiologic solution of sodium chloride and the like are to be employed. It is best, in our experience, to give small doses of epinephrine solution, which may be drawn into the syringe and injected at the same time as the serum to prevent the immediate reaction instead of employing the drug after the symptoms have developed. This procedure has given good results and is used as a routine in cases in which an immediate serum reaction seems likely to develop.

CONCLUSIONS

Serum disease occurred in 28.1 per cent of 2,859 patients who received diphtheria antitoxin, in 22.7 per cent of 858 patients who received scarlet fever antitoxin, and in 81.8 per cent of 55 patients who received antimeningococcus serum.

The occurrence of a serum reaction after the injection of diphtheria and scarlet fever antitoxin is determined in part by the susceptibility of the individual, by the toxic properties of the serum, and, in the largest measure, by the total quantity of serum given. Concentrated diphtheria antitoxin calls forth reactions in about the same proportion as does whole serum in corresponding bulk.

The serum reactions after the use of scarlet fever antitoxin were slightly less in frequency than those after the use of diphtheria antitoxin. They were not more severe.

The incidence of serum disease does not vary widely in the various age groups.

The interval between the injection and the appearance of the reaction varies from a few minutes to thirty days. The majority of the reactions appear before the eleventh day.

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ALLERGIC MIGRAINE

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In a recent review of the subject of allergic migraine, I [1] stated that Vaughan,[2] in 1922, was the first to report two cases of migraine due to food allergy and that in 1927 he [3] reported ten other cases. Laroche, Richet and Saint Girons,[4] in 1919, had suggested that migraine might be due to food sensitization. In 1927 I [5] stressed food allergy as a cause of migraine in two different articles, and in 1928 I [6] reported forty cases with allergic migraine relieved with elimination diets. In 1930, in an article on allergic toxemia and migraine, eighty-six cases of such headache were analyzed.[7] Balyeat [8] cited one case of allergic migraine in 1928, two cases in 1929 and fifty-five cases in 1930. Recently, he and Rinkel [9] have studied 202 cases of migraine from the allergic point of view and have emphasized the frequency of migraine in children.[10] Beecher [11] reported four cases in 1929. Eyermann,[12] in 1931, reported good results in 69 per cent of a group of sixty-three patients with headaches. The causative foods were determined by diet trial based on slight or positive skin tests and confirmed by diet trial.

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2. Vaughan, W. T.: Diseases Associated with Protein Sensitization, Virginia M. Monthly **49**: 316 (Sept.) 1922.
3. Vaughan, W. T.: Allergic Migraine, J. A. M. A. **88**: 1383 (April 30) 1927.
4. Laroche, Richet and Saint Girons: Alimentary Anaphylaxis, translated by Rowe, Berkeley, Calif., University of California, 1930; French edition, Paris, 1919.
5. Rowe, A. H.: Allergy in the Etiology of Disease, J. Lab. & Clin. Med. **13**: 31 (Oct.) 1927; Food Allergy: A Common Cause of Abdominal Symptoms and Headache, Food Facts **3**: 7, 1927.
6. Rowe, A. H.: Food Allergy: Its Manifestations, diagnosis and Treatment, J. A. M. A. **91**: 1623 (Nov. 24) 1928.
7. Rowe, A. H.: Allergic Toxemia and Migraine Due to Food Allergy, California & West. Med. **33**: 785 (Nov.) 1930.
8. Balyeat, R. M., and Brittain, F. L.: Allergic Migraine: Based on the Study of Fifty-Five Cases, Am. J. M. Sc. **180**: 212 (Aug.) 1930.
9. Balyeat, R. M., and Rinkel, H. J.: Further Studies in Allergic Migraine: Series of 202 Consecutive Cases, Ann. Int. Med. **5**: 713 (Dec.) 1931.
10. Balyeat, R. M., and Rinkel, H. J.: Allergic Migraine in Children, Am. J. Dis. Child. **32**: 1126 (Nov.) 1931.
11. Beecher, W. L.: Migraine or Sick Headache, Illinois M. J. **55**: 123 (Feb.) 1929.
12. Eyermann, C. H.: Allergic Headache, J. Allergy **2**: 106 (Jan.) 1931.

Phillips [13] has affirmed the frequency of food allergy as a cause of migraine and has recommended the elimination diets in its control. This completes the summary of the contributions that have established food allergy as a frequent cause of migraine.

Woltman,[14] in 1925, stated that migraine was usually hereditary and protean in its manifestations. He emphasized the fact that migraine might be mild or severe, occurring in any part of the head, evidencing itself in a dull headache, in transient scotoma or in periods of mental depression or inertia or by transient paresis, paresthesia or aphasia. He said that most so-called gastric or bilious headaches are migrainous in type. The severe type of migraine at times suggested brain tumor and often lasted many days, being associated with severe nausea and vomiting and great exhaustion and mental depression. This variability of symptoms corresponds with the experience of other students of migraine. In his classic monograph on migraine, Liveing,[15] in 1873, emphasized the periodicity, the disturbances in sight, speech, tactile sensations and psychic functions, the drowsiness, dizziness, headache, nausea, vomiting and the frequent association of migraine with epilepsy, spasmodic croup and asthma. Thus, migraine includes a wide variety of symptoms associated with headaches and as such is considered in this contribution.

Allergy as a cause of migraine has been considered in other articles during the last two decades. Tileston,[16] in 1918, commented on the similarity of migraine to asthma and reported headaches in one boy which were due to eggs, meat and fish. Brown,[17] in 1920 and in 1925, reported headaches arising from various foods and he felt that they were due to protein poisoning. His skin tests were all negative. Moloney,[18] in 1928, stated that migraine was most frequent in patients who had a personal or familial history of allergy. Allergy as a cause of migraine was also considered and discarded by T. R. Brown [19] in 1921 and more recently in 1929; by Minot [20] in 1923; by McClure and Huntsinger [21] in 1927 and 1928; by Laing [22] in 1927; by Hartsock [23] in 1927, and by Stevens [24] in 1929. Most of these writers felt that migraine was due to hepatic dysfunction, indigestion, endocrine disturbances, fatigue, nervousness and various other causes. However, no reports of successful results exist comparable to those which have been recorded from the elimination of allergic foods, showing that these hypothetic considerations have not been of marked value in the control of migraine. The occasional benefit derived from carbohydrate or protein free diets reported by Brown, Minot and Hartsock could have resulted from the elimination of allergenic foods in such diets. Several of these writers warned against the futility of abdominal or nasal surgery and of the extraction of teeth and were discouraged with the results from the control of ocular strain or defects.

TABLE 1.—*Statistics on One Hundred and Thirty Private Patients with Headache as a Major Complaint*

Ages	No. of Cases
10–15	1
15–35	39
35–55	70
55 up	20
Males	31
Females	99
Duration of Symptoms	
½–1 year	9
2–5 years	26
Over 5 years	95

Family History	No. of Cases
Family history (positive)	90 (69.2%)
Headache	56
Asthma	30
Hay fever	15
Eczema	5
Urticaria	7
Chronic indigestion	21
Skin Reactions	
Foods	23
Inhalants	15
Miscellaneous	7

Personal History	No. of Cases
Nasal congestion	44
Hay fever	20
Bronchial asthma	6
Chronic indigestion	53
Nausea	71
Vomiting	51
Abdominal pain	25
Mucous colitis	6
Constipation	57
Diarrhea	15
Eczema	26
Urticaria	39

Operations with No Relief to Headaches	No. of Cases
Appendectomy	11
Cholecystectomy	7
Intestinal obstruction (not found)	2
Ovarian cysts	2
Hysterectomy	1
Curettement	2
Artificial menopause (radium)	2
Nasal surgery	11
Tonsillectomy	5
Extraction of teeth	4
Spinal puncture	1
Total	48

In the consideration of allergic migraine, the other causes of headache, such as sinusitis, eye strain, arteriosclerosis, arthritis, focal infections, nephritis, brain tumors and pelvic disorders must be considered and kept in mind in the differential diagnosis. Thorough diagnostic studies including all types of laboratory investigations indicated by the patient's history and physical conditions must be carried out in each patient, so that headaches due to any of the causes named may be recognized. Allergic migraine, however, occurs in patients with other types of pathologic changes, treatment of which without proper elimination diets is not effective in the control of the headaches.

PERSONAL STUDIES

Statistics on 130 private patients, one of whose major complaints was headaches, are presented and the reported relief is based on a recent follow-up in each case. My studies have been largely confined to adults. However, in many of the patients the symptoms started in childhood, as shown by the data on the duration of symptoms. Moreover, the literature emphasizes the frequency of migraine in youth, when it is probably often overlooked or ignored. Most of my patients had had their symptoms longer than five years, and the majority of them had nausea or vomiting associated with their headaches. Personal history of conditions which are frequently due to allergy is shown in table 1. Hay fever, nasal congestion, hives and eczema were especially common in comparison with other disturbances.

The family history was positive for allergy in 69.2 per cent and gave a history of migraine in 43 per cent,

13. Phillips, E. W., in discussion of Presson, V. G., and Wilson, R. A.: Gastro-Intestinal Allergy and Its Sequelae, Southwest. Med. **16**: 8 (Jan.) 1932.
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15. Liveing, E.: On Migraine and Sick Headache and Some Allied Disorders, London, 1873.
16. Tileston, Wilder: Migraine in Childhood, Am. J. Dis. Child. **16**: 312 (Nov.) 1918.
17. Brown, R. C.: The Protein of Foodstuffs as a Factor in the Cause of Headache, Wisconsin M. J. **19**: 337 (Dec.) 1920; Protein Poison Theory: Its Application to the Treatment of Headache and Especially Migraine, Brit. M. J. **1**: 155 (Jan. 24) 1925.
18. Moloney, J. C.: Etiology of Migraine, Arch. Neurol. & Psychiat. **19**: 684 (April) 1928.
19. Brown, T. R.: Rôle of Diet in Etiology and Treatment of Migraine and Other Types of Headache, J. A. M. A. **77**: 1396 (Oct. 29) 1921; Metabolic Studies in Regard to Certain Forms of Arthritis and Also Migraine with the Proper Diet in These Cases, J. A. M. A. **92**: 2191 (June 29) 1929.
20. Minot, G. R.: The Rôle of a Low Carbohydrate Diet in the Treatment of Migraine and Headache, M. Clin. North America **7**: 715 (Nov.) 1923.
21. McClure, C. W., and Huntsinger, M. E.: Paroxysmal Headache, New England J. Med. **199**: 1312 (Dec. 27) 1928.
22. Laing, G. H.: Migraine Types in Relation to the Gastro-Intestinal Tract, M. Clin. North America **11**: 49 (July) 1927.
23. Hartsock, C. L.: Migraine, J. A. M. A. **89**: 1488 (Oct. 29) 1927.
24. Stevens, N. C.: Endocrine and Fatigue Headaches, New England J. Med. **201**: 801 (Oct. 24) 1929.

of asthma in 23 per cent, and of hay fever in 11.5 per cent of the 130 patients.

Operations of various types, as indicated in table 1, had been performed without relief to headaches. Of these, appendectomy, cholecystectomy and nasal operations were most frequent. With the use of elimination diets, modified by history and skin reactions, good results occurred in 73.1 per cent of this series of 130 patients with headache; failure occurred in 20 per cent; fair results occurred in 6.9 per cent. Of the 109 patients who gave good cooperation, good results occurred in 87 per cent. These results compare with those of Eyermann,[12] who recently reported good results in 69 per cent of a series of 63 patients, and of Balyeat,[9] who recently reported definite results in 88 per cent of 202 cases. Most of my patients had tried other types of therapy for the relief of their symptoms.

An analysis of the patients who obtained only fair results or no results at all is profitable. Of these thirty-five patients, twenty-one gave poor cooperation in following their diets. Good cooperation, however, was given by fourteen patients who failed to obtain results.

Miss R. continues to have headaches in spite of strict adherence to various elimination diets. All types of examinations have been negative. Two ophthalmologists found nothing abnormal in her eyes. She has had long courses of ovarian and pituitary extracts hypodermically, and nonspecific protein therapy has been used—all with no effect. The possibility of a psychologic problem has been considered.

Mrs. B. is undernourished, is nervous, and gives large skin reactions to all types of pollens and animal emanations and many different foods. She has had the uterus and gallbladder removed, but her headaches persist.

Mrs. L. has recurrent headaches, unaffected by various types of elimination diets. She has marked duodenal stasis which indicates pathologic changes in the upper quadrant. Operation has been refused.

Mrs. H. likewise has pathologic changes in the upper part of the abdomen together with a trigeminal type of neuralgia. Elimination diets have failed to produce relief.

Mrs. L. and Mrs. A. H. have severe recurrent migraine, which has not yielded to elimination diets. Repeated duodenal drainage, hypodermics of ovarian and pituitary extracts, intravenous and subcutaneous peptone and psychotherapy have been unavailing in each patient.

Miss C. had extensive nasal surgery before I saw her and complained of great fatigue and nervous exhaustion. Elimination diets were ineffective.

Miss H. had excellent results from the elimination diets for one year. Since then she has apparently developed sensitizations varying from mild to severe ones to practically all foods and at present is fairly free from her symptoms on a restricted elimination diet which maintains her weight and strength.

Mrs. L. and Miss W. have had no relief from the elimination diets and have tried many other diets and forms of medical therapy for many years without relief. Physical and laboratory examinations of these patients by several other internists have been negative. Mrs. R. has large reactions to practically all types of pollen and many foods. A diet free from all allergenic foods has not been possible and the effect of her extensive pollenosis has not been determined. Mrs. C. was not benefited by elimination diets and it was felt that nervous influences were responsible for her migraine.

Miss C. likewise is extremely nervous and introspective. Cholecystectomy had given no relief, and no help was obtained from diet trial over a period of six months.

Mrs. E. has had headaches of the worst type all her life. Pelvic surgery and cholecystectomy had given no help. Elimination diets, duodenal drainage, intravenous peptone, peptone and trypsin by mouth and stool vaccines have been entirely useless.

Thus these patients, who were not helped by elimination diets, were not benefited through other forms of therapy. This again emphasizes the importance of food allergy in the etiology of this malady, especially in view of the fact that 73 per cent of my 130 patients, 69 per cent of those reported by Eyermann[12] and a higher percentage of those recently reported by Balyeat[9] obtained good results from the elimination of allergenic foods.

It is evident that all patients with migraine, as well as those with mild types of headache and migrainous equivalents, must be studied with allergy in mind.

PATHOGENESIS

A localized edema of the cerebral tissues or localized spasms of cerebral blood vessels may be the cause of the migrainous symptoms. Vomiting may be of central origin or may be due to localized allergic disturbances in the gastro-intestinal tract or in the liver itself. The hepatic swelling with associated icterus, which has been reported through the literature in certain patients during attacks of migraine, may be due to such localized allergy in the hepatic tissues.

As localized allergic reactions occur in the cerebral tissues, so they undoubtedly arise in the tissues of the spinal cord and peripheral nerves, causing various nervous symptoms, chief among which is peripheral neuralgia in various parts of the body.

DIAGNOSIS AND TREATMENT

My previous publications[1] have described the method of diagnosis and the use and development of my elimination diets for the determination of food allergies. In brief, certain patients are relieved by the exclusion of those foods to which positive skin reactions or a history of definite food idiosyncrasies exist. However, most adult patients fail to give satisfactory skin reactions to allergenic foods, and in most instances it is advisable to use diet trial, excluding those foods which most frequently produce allergy. For this purpose, my elimination diets have been of increasing value during the last five years.

TABLE 2.—*Results and Cooperation in One Hundred and Thirty Patients with Headaches from the Use of Elimination Diets*

Cooperation	Number of Cases	Results	Number of Cases	Per Cent
Poor	11	Failure	26	20
Fair	10	Fair	9	6.9
Good	109	Good	95	73.1

Good results demand absolute cooperation of the patient over a period of weeks or months. The slightest break in the diet, especially in the first few weeks, often precipitates migraine. Gradually the individual's tolerance for the offending foods can be determined and, with their continued elimination, desensitization may gradually occur.

It has been my experience that little help can be obtained from any measures other than the exclusion of allergenic foods from the diet in patients with allergic migraine. Occasionally the hypodermic administration of 5 per cent peptone seems to be of help, especially in those patients who have sensitizations to practically all types of food. Peptone by mouth has been disappointing. The possibility of migraine arising from inhalant or bacterial allergy exists, but definite proof of such etiology is not available. Treatment for

the relief of anemia, nervousness, indigestion due to various causes, including achylia and deficiency in digestive ferments, and the control of all other pathologic states undoubtedly is of aid in the control of migraine due to food allergy. But without absolute adherence to the prescribed elimination diet, allergic migraine cannot be successfully eradicated.

CONCLUSIONS

1. Food allergy as a frequent cause of migraine has been demonstrated.

2. Of 130 patients, good results with the elimination of allergenic foods occurred in 87 per cent of the 109 patients who gave good cooperation.

3. My elimination diets, modified by positive skin reactions or a history of idiosyncrasies to specific foods, have been effective in the determination and control of the food allergy.

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Clinical Notes, Suggestions and New Instruments

SILICOSIS IN A TUBERCULOSIS HOSPITAL

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The present paper is a report of a clinical and statistical study of pneumonoconiosis in a general tuberculosis hospital in a district in which the industries do not especially predispose to this condition.

It is well known that silicosis predisposes to tuberculosis and that the tuberculosis mortality among workers in silica dust is from ten to twenty times higher than that of the general population. Britton and Head [1] have recently emphasized the fact that silicosis develops slowly and that frequently many years intervene between the cessation of exposure to the dust and the appearance of symptoms. Not infrequently the first symptoms are those of a superimplanted tuberculosis.

Knowledge of these facts led us to believe that a careful search through a large tuberculosis hospital would reveal many instances of tuberculosis secondary to silicosis and would be valuable in affording some idea of the importance of this condition in the general tuberculosis problem. We expected that in the Chicago area, which like any large city is more or less the center of gravity for a large shifting population, we would encounter many instances in which the exposure had occurred in distant localities and in which many years had elapsed between the cessation of exposure and the development of symptoms.

TABLE 1.—*Incidence of Silicosis in Five Hundred Cases of Tuberculosis*

Ages	Number of Patients	Cases of Silicosis	Percentage
20 to 30	182	0	0
30 to 40	105	3	3
40 to 50	116	9	8
50 to 60	81	4	5
60 and over	16	1	6

Five hundred male patients, admitted consecutively to the tuberculosis wards of the Cook County Hospital, were carefully questioned. A complete industrial history was taken of each patient from the time he started work until he was admitted to the hospital. Among the 500 patients there were discovered 17 (or 3.4 per cent of the total) who had definite silicosis.

Since silicosis is an occupational disease and one which develops very slowly, it occurs most often in late adult life. Tuberculosis has its highest incidence in the years of adolescence and those closely following. One would expect, therefore, that more of the older tuberculous patients would have silicosis than of the younger. This was found to be the case. Table 1 shows the incidence in the different decades. The average age was 45 years.

There were no instances among those under 30 years of age; of the 318 patients over 30, 5.3 per cent had silicosis, while of those over 40, the percentage was 6.6. The highest incidence, 8 per cent, occurred in the fifth decade.

Table 2 shows the nature, location and duration of the exposure as well as the interval between the cessation of exposure and the onset of symptoms.

TABLE 2.—*Source, Location and Duration of Exposure*

Age	Nature of Work	Duration of Exposure	Free Interval
43	Coal mine in Pennsylvania	1 year	15 years
31	Lead and zinc mines in Missouri	5 years	0
47	Coal mine in Pennsylvania	10 years	18 years
60	Coal mine in Pennsylvania	20 years	10 years
52	Sandblasting	10 years	0
47	Sandblasting	5 years	10 years
48	Copper mine	1 year	15 years
42	Sandblasting	1 year	4 years
46	Coal mine in Poland	3 years	7 years
38	Coal mine in Pennsylvania	4 years	18 years
56	Lead, zinc and iron mines	35 years	0
50	Coal mines in Pennsylvania	10 years	5 years
42	Coal mines in West Virginia	2 years	
	Cleaning dies in foundry	5 years	0
52	Rock heading soft coal mine	2 years	9 years
47	Sand shoveling in foundry	6 years	6 years
32	Sandblasting	10 years	0
40	Mining	?	?

Mining and sandblasting accounted for all save one of the seventeen cases; twelve of the patients were miners, four sandblasters and one had shoveled sand in a foundry for six years. Of the twelve miners, nine had mined coal, two lead and zinc and one copper. Of the nine coal miners, five had worked in the Pennsylvania mines, one in those in West Virginia, one in Poland, for one the location was not stated and one had done rock heading in a soft coal mine for two years.

In different parts of the country the origins of the silicosis will be different. It is of particular interest that in the Chicago area such a large percentage of the cases originated in the Pennsylvania coal fields, a smaller percentage in the lead, zinc and copper mines of the West and an even 25 per cent in local industries. Immigrants, especially from the slavic states of central Europe, stop first on the Eastern seaboard, many of them finding work in the Pennsylvania mines. After working there a number of years, many of them seek better conditions and more congenial work in Western cities. Of these, Chicago gets its share. It was often many years after they had reached Chicago that the effects of the dust became manifest.

Only four of the patients developed symptoms while still engaged in the dusty work; two of these were sandblasters and two were lead and zinc miners. In the other twelve there was an average interval between cessation of work and onset of symptoms of 10.75 years, with low and high limits of four and eighteen years, respectively. The average duration of exposure was eight years, with low and high limits of one and thirty-five years, respectively.

The diagnosis of silicosis and tuberculosis is made on three bases: a history of exposure to dust, a characteristic roentgenogram, and the finding of tubercle bacilli in the sputum. All these must be positive, for the roentgenogram of simple silicosis can closely simulate tuberculosis, and some types of tuberculosis can closely simulate silicosis. There are, furthermore, conditions other than tuberculosis which can be confused with pneumonoconiosis.

The history must be investigated with great care. The exposure may have been many years in the past and of only

From the tuberculosis wards of the Cook County Hospital.

1. Britton, J. A., and Head, J. R.: Pneumonoconiosis, J. A. M. A. 96: 1938-1939 (June 6) 1931.

short duration. The patient may have forgotten it or may not have recognized that it was an exposure. In the face of a characteristic roentgenogram, one should go over and over each period of the patient's industrial history. Pancoast cites an instance of a positive roentgenogram in the case of a tap dancer. No history of exposure could be determined until the patient volunteered the information that he had scattered sand on the stage before each performance. We recently saw a patient whose lungs were marked by silica just as plainly as if the word were written there and yet who swore that he had never done anything save farming and butter making.

The roentgenogram is of first importance in the diagnosis. First stage silicosis, characterized merely by an increase in the hilus shadows, cannot be recognized unless the history of exposure is known, and even then it is a more or less doubtful entity. Second stage disease, on the other hand, gives one of the most characteristic of roentgenograms. The miliary bronchial nodules radiating from the hilus into the lung fields, affecting principally the middle areas and sparing the apexes and bases, are almost diagnostic. The picture can be simulated only by miliary tuberculosis, passive congestion, miliary carcinosis and some rare fungous infections.

In the third stage there is a coalescence of the miliary nodules with the formation of large areas of increased density often affecting a whole lobe. This stage closely simulates fibroid tuberculosis, and it is difficult to say in any given instance whether or not tuberculosis is also present. Cavities or a pleural effusion practically always mean tuberculosis, and fever and systemic symptoms suggest it strongly. The diagnosis can be confirmed only by the finding of tubercle bacilli in the sputum, and in this type of tuberculosis they are often difficult to find.

In the present series there is the probability that some of the patients had pneumonoconiosis uncomplicated by tuberculosis and were in the hospital under a mistaken diagnosis. Examination of the roentgenograms and clinical records suggests strongly that this was the case in at least two instances. The sputum was positive in all save five cases. In three of the five, the roentgenograms showed obvious tuberculosis with cavitation. In fifteen of the seventeen one can say definitely that tuberculosis was present. In two it is probable that there was no tuberculosis.

If a patient has silicosis without tuberculosis, he should not be allowed in a tuberculosis hospital, much less confined there. No other group of individuals is so susceptible to the disease. This fact should be borne in mind and pains taken to distinguish the two conditions. As has been said before, this is often difficult; for the roentgenographic signs in third stage silicosis are practically identical with those of certain types of tuberculosis. The former condition, however, rarely causes fever or loss of weight and the physical signs are often absent or of a type to suggest bronchitis rather than tuberculosis. Constant post-ptussal râles over one or both apexes suggest tuberculosis. It is generally felt that pleurisy with effusion occurring in these cases is of tuberculous origin. Cavitation does not occur in uncomplicated silicosis and when present is practically certain evidence of tuberculosis. In many cases in the last analysis the presence or absence of tuberculosis must be determined by the examination of the sputum. In these cases, especially if there is no cavitation, tubercle bacilli are not abundant and often must be sought for repeatedly and by culture or animal inoculation of the sputum.

SUMMARY

1. Seventeen cases of silicosis or silicosis and tuberculosis, 3.7 per cent of the total, were found among 500 male patients admitted consecutively to the tuberculosis wards of the Cook County Hospital in Chicago.

2. Fifteen of these had silicosis and tuberculosis. In two a definite diagnosis of tuberculosis could not be established.

3. The condition, as was expected, was more frequent among the older patients. It was found in no patients under 30, in 3 per cent of those between 30 and 40, in 8 per cent of those between 40 and 50, in 5 per cent of those between 50 and 60, and in 6 per cent of those over 60.

4. In only 25 per cent of the cases was the exposure incurred in Chicago or its vicinity. In the majority of instances it was in mining, principally in the coal mines of Pennsylvania and West Virginia and in the metal mines of the West.

5. In all save four cases there was a free interval between the cessation of exposure and the appearance of symptoms. The average interval was 10.75 years. The low and high limits were four and eighteen years, respectively.

104 South Michigan Avenue—3245 Fullerton Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

LANG HOSPITAL INSULATED PROLONGED FLOWING BATH WITH HAMMOCK ACCEPTABLE

The Lang Hospital Insulated Prolonged Flowing Bath with Hammock is manufactured by William J. Lang of Chicago and is designed for general hydrotherapy treatments.

The sides and the bottom of the bath are made of two thicknesses of 1 inch veneer and two thicknesses of compressed cork with an air space between the cork thicknesses. The inner lining, capping and corners are of stainless steel. The four outer sides are faced with white "Bakelite." The bath is supported by four marble blocks. This insulated construction is provided for the purpose of maintaining the temperature of the water. The inside dimensions of the standard equipment are: length, 6 feet 6 inches; width, 2 feet 6 inches, and depth, 2 feet 4 inches. However, by special order, the bath can be constructed to any desired dimensions.

Lang Hospital Insulated Prolonged Flowing Bath with Hammock.

The bath is equipped with a 3 inch combination waste and overflow, designed to allow an 8 inch variation in the depth of the water. All metal in connection with the waste and supply for the bath is brass, chromium plated.

A Powers Thermostatic Water Mixer designed to control the mixing of hot and cold water thermostatically and deliver a constant supply of warm water is a major part of the equipment.

The firm claims that the temperature of the water mixture remains so constant that it will not vary to within 0.5 degree F., plus or minus, regardless of temperature or pressure changes in the hot or cold water supply lines. There are never sudden "shots" of hot or cold water. Failure of either supply completely shuts off the delivery flow. Restricting the delivery flow has slight effect on the delivery temperature. The temperature range of the mixer is from cold water to 115 F.

The hammock is constructed of 1¼ inch angle iron with adjustable shoulder and head rests, brazed on all joints. Steel cane is welded between the frame, shoulder and head rests. The foot rest is made of white ash and has an 18 inch variation of adjustment. Rubber bumpers measuring 2½ by 3½ inches are placed on the four corners of the hammock to prevent it from defacing the sides of the bath; also they act as rests when the hammock is lowered to the bottom of the bath. All metal parts of the hammock are thoroughly galvanized.

The lowering and raising device of the hammock is constructed of 3 inch galvanized steel posts and angle iron. The cables, swivel joints and unlocking devices are of bronze. The lowering and raising device is controlled by one lever, which holds the hammock and the patient at any desired position without locking of the lever.

An adjustable tray in connection with this bath is connected to the side of the bath and may be set at any desired height or position, allowing the patient to eat or read while under treatment. The shipping weight is about 400 pounds.

The Council declares the Lang Hospital Insulated Prolonged Flowing Bath with Hammock eligible for inclusion in the Council's list of accepted devices.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

CARNATION MALTED MILK

Manufacturer.—Carnation Company, Milwaukee.

Description.—A dried malted milk in tins.

Manufacture.—The product is prepared from whole milk, barley malt and malted wheat flour.

Coarsely ground barley malt, water and wheat flour are mixed in a nickel mash kettle equipped with an agitator and steam coils. A definite mashing temperature is maintained until the starch is converted to soluble carbohydrates relatively high in maltose and low in dextrins. The solid material is separated from the liquid in a sieving kettle with a perforated false bottom. The liquid is flowed over a fine mesh screen to remove coarse insoluble materials and further clarified by means of mechanical clarifiers. The clarified liquid containing protein and other substances in suspension is tested for total solids to determine the quantity of whole milk to be added to give the finished product a milk-fat content of not less than 8 per cent. Definite quantities of the liquid extract or "wort" and pasteurized whole milk are mixed, maintained at 54-57 C. for several hours and concentrated in "vacuum" to a desired density. (The absence of air tends to protect the natural vitamins present.) The condensed mixture is homogenized, cooled, and dried in a revolving drum "vacuum" drier in which the concentrated material is pumped against revolving steam heated drums, from which it is removed in dry sheets by knives. The dry sheets are broken in small pieces, discharged from the "vacuum chamber," cooled, finely ground and packed in tins with both a friction and a screw cover.

The equipment used is of pure nickel, glass-lined steel or tinned copper and is cleaned daily. The milk and raw materials are subjected to regular laboratory inspection and examination.

Analysis (submitted by manufacturer).—

	per cent
Moisture	2.7
Ash	2.3
Fat	8.4
Protein (N × 6.25)	12.8
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	73.5
Chloride (Cl)	0.39
Sodium (Na)	0.42
Potassium (K)	0.37
Calcium (Ca)	0.25

Calories.—4.2 per gram; 119 per ounce.

Claims of Manufacturer.—A malted milk for the preparation of table beverages.

HOLSUM SLICED BREAD

Manufacturer.—Miller-Patton Baking Company, Rockford, Ill.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, yeast, malt syrup, lard, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, salt, sucrose, powdered skim milk and shortening.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.1
Ash	2.0
Fat	2.6
Protein (N × 6.25)	10.0
Carbohydrates other than crude fiber (by difference)	50.0
Crude fiber	0.3

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

CROWN BEST PATENT FLOUR—UNBLEACHED

Manufacturer.—Crown Mills, Portland, Ore.

Description.—An "all purpose" short patent flour milled from a blend of hard white wheat and hard red wheat; for home baking; not bleached.

Manufacture.—A blend of hard white wheat and hard red wheat is cleaned, washed, tempered, and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and automatically packed in cotton bags.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.36
Fat (ether extraction method)	1.2
Protein (N × 5.7)	10.4
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	74.1

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—An "all purpose" short patent flour for home baking.

MANBECK'S BONNIE BREAD

Manufacturer.—Manbeck Baking Company, Harrisburg, Pa.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, sweetened condensed whole milk, vegetable shortening, salt, sucrose, yeast, malt syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	36.7
Ash	1.6
Fat	2.7
Protein (N × 6.25)	9.2
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	49.5

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

(a) MANOWIS BRAND CORN SYRUP WITH CANE FLAVOR

(b) PUCKETT'S GOLDEN CORN SYRUP WITH CANE FLAVOR

(c) BUTTER CUP BRAND CORN SYRUP WITH CANE FLAVOR

(d) GOLD BOND BRAND CORN SYRUP WITH CANE FLAVOR

(e) GOLD BOND BRAND CORN SYRUP WITH CANE FLAVOR

(f) CANEW BRAND GOLDEN SYRUP WITH CANE FLAVOR

(g) OZARK BEAUTY BRAND GOLDEN CORN SYRUP WITH CANE FLAVOR

(h) BLUE RIBBON BRAND GOLDEN CORN SYRUP WITH CANE FLAVOR

(i) BYERLY TROPHY BRAND CORN SYRUP WITH CANE FLAVOR

Respective Distributors.—(*a*) Plumb & Nelson Company, Manitowoc, Wis.

(*b*) Puckett's Cash Stores, Sayre, Okla.

(*c*) Tindall, Kolbe & McDowell, Milwaukee.

(*d*) Milburn-Johnston Grocery Company, Kensett, Ark.

(*e*) Harrison Grocery Company, Harrison, Ark.

(*f*) New York Store Mercantile Company, Cairo, Ill.

(*g*) Pocahontas Grocery Company, Pocahontas, Ark.

(*h*) Woodward Wholesale Grocery Company, Woodward, Okla.

(*i*) J. A. Byerly Company, Inc., Owosso, Mich.

Packer.—D. B. Scully Syrup Company, Chicago.

Description.—These table syrups are the same product as Banner Blue Corn Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817); corn syrup base (85 per cent) with refiners' syrup (15 per cent).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 10, 1932

THE PRIVATE PRACTITIONER AND PREVENTIVE MEDICINE

The physician of the future must be increasingly a practitioner of preventive medicine. Obviously this involves new relationships to the public and to the health official. Under various forms of state practice, problems have arisen which were discussed by Sir George Newman, K.C.B., M.D., F.R.C.P., chief medical officer of the Ministry of Health, who in his capacity as president addressed the Section of Public Health at the centenary meeting of the British Medical Association.[1] He pointed out that in no previous age has there been such growth of the conception of preventive medicine as in the present era, paying tribute to Bright, Addison, Hodgkin, Gull, Jenner, Osler, Allbutt and Barlow for the constructive service that has been rendered in the great march of preventive medicine by medical practitioners. "It is they," he said, "who have made the bricks, found the road, explored the facts, carried on the fight, and educated the people in a way of life." He elucidated further: "They searched into the circumstances of disease and related it to environment; they introduced medical notification and hospital isolation; by their investigation of factory conditions they initiated industrial welfare; they stemmed the rising tide of spirit drinking; they began the reformation of midwifery and were the first to attack the problems of child sickness and mortality; they established dispensaries and staffed the new hospitals; their systematic support of vaccination instituted the practice of immunity; and their scientific observation was the beginning of British epidemiology."

Sir George Newman then described the practitioner as a medical officer, pointing out how British physicians were responsible for the attention paid to preventive medicine in the Poor Law of 1834 and how they were the first to sponsor the Royal Commission of 1869. This commission first proposed a ministry of health, established fifty years later. He brought his historical review down to date through a consideration of the practitioner in insurance practice under the insurance act of 1911. What Sir George Newman had to say about the insurance act should be of interest to American physicians and, indeed, to American patients. He pointed out that "15,000 medical practitioners have voluntarily joined in a cooperative scheme of the profession, the friendly societies and the state for the medical supervision of fifteen million people, more than a third of the whole population, inclusive of the wage earners of the country."

Here is a significant development. These practitioners represent three sevenths of the number of physicians who are members of the British Medical Association. Translated into American terms, it would mean 45,000 physicians in this country affiliated with such a scheme if one should be established in the United States. And if the same proportion of our population were to be participants in it, there would be forty million beneficiaries.

Sir George Newman, as a government official, sees in the British health insurance plan little but benefit to the public and the profession. There are, however, those who differ with him in this opinion. For example, he said that these insured persons come to their chosen physicians frequently and undeterred at the beginning of sickness, when disease may be most effectually controlled. It is undoubtedly true that they come frequently and undeterred, as may easily be understood when it is realized that their sick benefits are paid for in advance and that it is but human to desire value received for money paid. Perhaps it may also be conceded that they come at the beginning of sickness, when disease may be most effectually controlled. Yet American investigators, who may be presumed to approach their investigation without bias, regard as the most startling fact about the vital statistics of insurance countries the steady and fairly rapid rate of increase in the number of days the average person is sick annually and the continuously increasing duration of such sickness.[2]

Nor does Sir Arthur Newsholme fully support the views of Sir George Newman as to the value of health insurance in preventive medicine. In 1920 Newsholme[3] said: "The chief justification of a national system of insurance against sickness is that it shall be an active auxiliary in the prevention of disease. At present it is doubtful whether any national system of sickness insurance has been so. It has only been so to the extent to which the medical treatment of the masses of the population has been improved by it; and no such improvement can be claimed for British insurance." In 1927 he did not seem to have changed his mind a great deal, for then he[4] pointed out that "the demands on

1. Brit. M. J. 2: 190 (July 30) 1932.

2. Simons, A. M., and Sinai, Nathan: The Way of Health Insurance, University of Chicago Press, 1932, p. 157.

3. Newsholme, Sir Arthur: Public Health and Insurance: American Addresses, Baltimore, Johns Hopkins Press, 1920, p. 109.

4. Newsholme, Sir Arthur: Health Problems in Organized Society, Westchester, P. S. King & Son, Ltd., 1927, p. 160.

insurance funds and on the expenses of official and voluntary child health work would be reduced to an almost incredible extent if the people were educated to practice the art of hygienic living." After sixteen years, health insurance had not, apparently, been a potent force in public health education in Great Britain.

These points of view are incompatible unless there exist elements in insurance practice which preclude the effective application of the principles of preventive medicine. Simons and Sinai [5] point out that the value of continuous records kept by insurance practitioners, which has been much stressed as an important point in favor of insurance practice, must be discounted because "examination of these [records] is sufficient to show that in their present form they are too indefinite and scanty to be of any great value as a guide to subsequent treatment." [6] Nevertheless, says Newman, "I have no doubt that health insurance is one of the most effective instruments of preventive medicine which we possess."

Sir George Newman points out the advantages of social insurance to the practitioner but does not speak of the disadvantages which Simons and Sinai [7] list: "(1) restrictions on treatment; (2) restrictions on prescribing; (3) free choice of doctor; (4) professional secrecy; (5) the required records, or 'red tape'; (6) entrance to insurance practice; (7) clinics; (8) certification." No doubt the British system [8] is superior to other systems in that the medical profession, through the British Medical Association, has a greater voice in the management of insurance practice than has the medical profession in other countries, notably Germany, where bitter criticism of the system is rampant.[9]

Medical practice in America today includes the activities of hospitals, clinics, medical schools and public health departments. Scientific research has opened new vistas for the prevention of disease, and increased costs of medical care, including prevention, diagnosis and treatment, are inevitable. That there will be some movement to solve the economic problem thus created is to be expected and that the movement will be sponsored by social workers and humanitarians is also to be anticipated. The implication that only a socialized attack on the problem of medical costs will solve the problem need not, however, be accepted by the medical profession.

Simons and Sinai [10] point out that the British Medical Association was not consulted in the original drafting of the insurance act and that it cost its treasury £30,000 in addition to other large special voluntary funds raised by the association to get a voice in the determination of conditions under which physicians should practice. In France the medical profession took a timely stand and succeeded in having a determining voice in the establishment of the French system. In our country, economists, sociologists, foundations and such large commercial interests as the insurance companies are taking an active part in influencing public opinion. Fortunately there is still time for the medical profession to take its proper place in the determination of how the problems of medical practice shall be solved. That determination need not and probably will not be a selfish one. Any proposal relating to health depends on medical service. Without adequate provisions for delivering a high grade of medical service the profession suffers, but the public, that is, the patient, suffers still more. Sir George Newman fails to point out what Simons and Sinai [11] regard as the fundamental defect in existing health insurance systems; namely, combining the work of the practicing physician with that of the examiner or inspector on whose judgment cash benefits are awarded. This conflict disturbs the relationship of faith and confidence between patient and physician, which students of medical practice have from the beginning regarded as fundamental. While the doctor is expected to act as an inspector, he cannot function to fullest advantage either in treatment or in prevention of disease. In the light of other opinions, Sir George Newman has not made out a very convincing case for health insurance as a public health measure, at least on the British plan. It seems, indeed, to have developed merely a cheap method of satisfying underprivileged workers with a less than adequate medical service.

5. The Way of Health Insurance, p. 150.
6. Brend, W. A.: Health and the State, 1917, p. 259.
7. The Way of Health Insurance, p. 91.
8. The Way of Health Insurance, pp. 59-78.
9. Liek, E.: Sociale Versicherung und Volkgesundheit, Schweiz. med. Wchnschr. **60**: 466 (May 17) 1930. Pik, Gottlieb: Der Krankenversicherungsarzt als Problem, Zentralbl. f. Reichsversicherung u. Reichsversorgung, Oct. 1, 1930, p. 385. Cushing, Harvey: The Life of Sir William Osler **1**: 346.
10. The Way of Health Insurance, p. 81.
11. The Way of Health Insurance, p. 58.

THE PATHOGENESIS OF ADENOMATOUS (NODULAR) GOITER

Adenomas of the thyroid have for long been considered, largely from their morphologic similarity to adenomas elsewhere, as true benign neoplasms. Their origin has generally been attributed to the persistence of embryonal rests, even when present in the adult gland. This idea has persisted in spite of the absence of any actual convincing proof and has contributed to the confusion and difficulties so often encountered in any attempt to correlate the pathologic and the clinical pictures.

Experimental production of nodular goiter similar to these so-called adenomas has been reported recently by Cole and Womack [1] of the department of surgery at the Washington University School of Medicine. These workers studied the results of various factors, mostly chemical and infectious, which they had previously shown produce definite changes in the thyroid of dogs.

1. Cole, W. H., and Womack, N. A.: Normal and Pathologic Repair in the Thyroid Gland, Arch. Surg. **23**: 466 (Sept.) 1931.

They emphasize, first of all, that increases in the functional activity of the gland are produced by these stimulating factors and that they are usually associated with definite morphologic changes. These stimuli, if intense, may cause desquamative changes within a few hours. Milder stimulation over a relatively longer period of time may, however, produce hyperplastic changes similar to those seen in exophthalmic goiter. Cessation of the stimulus leads to involution in a manner similar to that produced by iodine, but in either case replacement by fibrous tissue becomes a prominent feature of the process.

Repetition of this physiologic cycle of hyperplasia and involution led to the production of adenomas. It was found that fibrosis played the most important part in its development, for the location and occurrence of the nodules apparently depended on the amount and location of the scarring. Thus, the mechanism of their production was probably the encircling of a group of acini by fibrous tissue with subsequent cycles of hyperplasia and involution. The most frequent nodular changes were seen when a profuse ingrowth of scar tissue was achieved, as by the injection of a solution of trypsin into the inferior thyroid artery or by other methods. Some of these nodules resembled in great detail the so-called fetal adenoma. That such adenomas were in fact due to the experiment was shown by their absence in control biopsies of the gland in each case. Moreover, sections of the thyroid gland of several hundred normal dogs from the vicinity of St. Louis were examined over several years and in no instance was an adenoma encountered.

Clinical observations have, in general, confirmed this functional explanation of the origin of these nodules. Rienhoff and Lewis [2] have had the opportunity of comparing sections of human hyperplastic glands before and after iodine therapy and have noted the abundant development of the fibrosis and adenoma formation as a part of the involution from iodine. Both Dunhill [3] and Hertzler [4] have also shown that these so-called adenomas develop during the course of involution of an actively hyperplastic gland.

From these investigations it would seem that nothing as mysterious as embryonic rests needs to be invoked to explain nodular goiter. Their pathogenesis would seem to be merely part of the functional changes in the thyroid, physiologic, no doubt, though probably exerted only in response to various kinds of stimuli, themselves largely pathologic. Moreover, since their pathogenesis is similar they should present no greater problem in treatment than do ordinary cases of hyperplastic goiter, an idea which, in spite of some dispute, is beginning to be generally held on the basis of clinical study alone. The possible relationship of adenomas to the formation of carcinoma of the thyroid is not yet clearly understood.

2. Rienhoff, W. F., Jr., and Lewis, Dean: Relation of Hyperthyroidism to Benign Tumors of the Thyroid Gland, Arch. Surg. **16**: 79 (Jan.) 1928.
3. Dunhill, T. P.: Toxic Goiter, Brit. J. Surg. **17**: 424 (Jan.) 1928.
4. Hertzler, A. E.: Pathogenesis of Goiter Considered as One Continuous Disease Process, Arch. Surg. **16**: 61 (Jan.) 1928.

DIET IN NEPHRITIS

The attitude of clinicians toward the problem of the protein intake in certain types of nephritis has been fundamentally altered in recent years. There was a time, not long ago, when the doctrine of "sparing the damaged kidneys" was rigorously applied in the dietary regimen of the patients. Realizing that the end-products of protein catabolism leave the body normally in the secretion of the kidneys, writers on clinical dietetics argued, with considerable logic, that a decrease in the intake of the food components involved ought to be beneficial to the nephritic patient. As a consequence, diets poor in protein were widely recommended. This attitude seemed to be further warranted by the allegation that high protein feeding is provocative of nephritis. Thus it has come about that many patients were experiencing a marked loss of protein not only because of the inadequate intake but also as a consequence of concomitant extensive albuminuria. Ultimately the plasma proteins may thus become depleted, with a resultant edema comparable to the now familiar nutritional edema.

The fact that nephritis is essentially a wasting disease is sometimes not fully appreciated, says Harrop,[1] particularly in patients who suffer from edema, which often gives them a fictitious appearance of good nutrition. He adds that persons with moderately advanced chronic nephritis are seldom overweight if the weight of the edema that may be present is disregarded. On the contrary, they are almost invariably underweight. That is why it becomes so important to supply an adequate caloric intake to spare nitrogenous metabolism as well as to furnish sufficient energy. Peters has accordingly pointed out that, if the caloric intake is deficient, more protein will be burned; if the protein intake sinks below a certain level, "all the calories in the world will not prevent wasting."

The danger of protein restriction—which has been termed a two-edged weapon—is becoming better recognized. As McLester [2] has remarked, protein destruction continues at all times, and the resulting nitrogenous waste products must pass through the kidneys, no matter how restricted the diet. Protein restriction cannot prevent this. Chronic nephritis often becomes a disease prolonged over months and years; hence the patient's strength must be conserved over long periods. The implications of this were stressed at the annual meeting of the Association of American Physicians,[3] held at Atlantic City. McCann and Kentmann of Rochester, N. Y., who have recently made observations

1. Harrop, G. A., Jr.: Diet in Disease, Philadelphia, P. Blakiston's Son & Co., 1930.
2. McLester, J. S.: Nutrition and Diet in Health and Disease, Philadelphia, W. B. Saunders Company, 1931.
3. Society Proceedings, J. A. M. A. **99**: 66 (July 2) 1932.

on patients showing various manifestations of Bright's disease, have reached the conclusion that as much as 80 Gm. of protein may be given daily without adverse effects even when hemorrhagic symptoms occur. The urea clearance was, if anything, improved by reasonably liberal diets; and the hematuria was not aggravated. Van Slyke, of the Rockefeller Institute, likewise encouraged the use of generous protein feeding in hemorrhagic nephritis. As he expressed his views, at the present time there is no justification in keeping the proteins low in the diet of nephritic patients because of their nephritis. He remarked that often the most comfortable patients were "those who had the good fortune to escape being dieted." As a general rule a fairly liberal diet should be permitted, to maintain the patient's strength and vigor for the longest possible period. The body as a whole, as well as the kidneys, must be considered. So long as the food intake is kept within the digestive capacity of the patient and urea clearance is not aggravated, only good can result. There are many factors besides protein that need consideration in the management of nephritis.

Current Comment

GROWTH AFTER REPRODUCTION

Reproduction in the mammal does not necessarily represent a loss of material to the maternal organism; to the contrary, the observation is commonly made that after the completion of one or more reproductive cycles there is a tendency to an increase in body weight. An extensive study of the influence of reproduction on growth in the mouse has been made and the results have been recently reported by Agduhr.[1] Whereas the body weight of the virgin females of this species is less than that of the males at a given age, the size of the females increases with progressive pregnancies until it surpasses that of the male. This augmentation in body weight of the individual is due not only to the increase in adipose tissue but also to the growth of organs. The liver, lungs, kidneys and heart increased in size in the experimental group of females, which differed from the control animals only in having given birth to several litters of young. In the skeleton, reproduction brings about an increase in length and volume of bone in spite of the fact that there occurs a marked decalcification as a consequence of lactation. In this instance, again, there has been demonstrated a persistence of the growth of the organic portion of the bones under conditions that are unfavorable to the mineralization of this tissue. That the increase in size after repeated gravidities is probably influenced by the endocrine glands is suggested by the augmented size of the hypophysis, the thyroid and the parathyroids. One series of animals was given large amounts of viosterol each day. With this dietary change there was a decrease in the body weight of the virgin females, whereas reproduction increased the body weight in proportion to the number of pregnancies. In spite of the decalcifying action of large doses of viosterol, the bones increased in size with recurring reproductive cycles. These studies offer further cogent evidence of the pronounced amplifying effects of reproduction on the female body. One may view these changes as an overcompensation, a phenomenon more or less common throughout nature.

1. Agduhr, E.: Upsala läkaref. förh. 38: 1, 1932.

ALLERGY AND SPECIFIC HYPERSENSITIVENESS

Use determines the meaning of words. Through changing use, the meaning of a word may change. Regardless of etymology and of former meanings, the words anaphylaxis, allergy and, in their restricted or immunologic sense, hypersensitiveness, hypersusceptibility and idiosyncrasy are now used more and more as synonyms. Sensitization also is sometimes used in the same general sense. The author of a widely used textbook discusses all the phenomena indicated by these words under the general heading of hypersensitiveness. In recent articles by an investigator, sensitization is used as practically synonymous with anaphylaxis. The other day a popular magazine said that hay fever, asthma, hives and certain forms of food sensitivity are all forms of allergy. In the periodical literature and speech of the day, the words in question are used more or less interchangeably. Usage so far has not given to any of these words a definitely restricted or special meaning that has been accepted generally. Perhaps there is a tendency to use anaphylaxis in discussing the most acute and violent manifestations of specific hypersensitiveness, especially in animal experimentation. The general tendency to use these words as at least partial if not perfect synonyms and as conveying no distinctions of fundamental significance is in full harmony with present scientific conceptions of the essential nature of the phenomena described by the words. As research progresses, it becomes established more and more conclusively that in the various forms of hypersensitiveness in man there is concerned a mechanism of the same general type; namely, antigen-antibody reaction in a specifically sensitized or partially immunized organism. By the previous introduction of the antigen, or sensitization, the reactivity of the organism has been altered, and hence the appropriateness of the word allergy (changed reaction), the general use of which seems to be growing. It will be remembered that the unitary view of the mechanism of hypersensitiveness has been opposed because it was held that antigens are proteins and that hypersensitiveness may be caused by nonprotein substances. Now it is known not only that nonproteins, such as carbohydrates, may be antigenic but also that so-called simple chemicals may form antigenic combinations with proteins. Another obstacle to the unitary view has been the difficulty of explaining how the organism is sensitized in spontaneous hypersensitiveness, in the vast majority of the cases of which there seemed to be no obvious clue to any previous introduction of the specific antigen. But it is now known that various antigens easily may enter the body as such through the digestive and respiratory tracts and perhaps in other ways, in both health and disease, and

there is no longer any difficulty in explaining natural sensitization. It has been found also that extremely minute quantities of antigen may sensitize. Perhaps the rôle of the hereditary factor in certain forms of hypersensitiveness consists in the development in the tissues of special tendencies to respond to antigens. Enough has been said to illustrate the drift both in scientific investigation and in the usage of names to accept the various manifestations of hypersensitiveness as based essentially on the same kind of immunologic mechanism.

OSTEITIS DEFORMANS

Since the first description of osteitis deformans by Sir James Paget of London, in 1876, more than five hundred cases have been recorded in medical literature. At present the x-rays afford almost the only means of detecting the disease in its early stages. Accordingly a recent writer has remarked that with the increasing use of roentgen examinations it appears reasonable that the incidence of the disease will probably be found to be still greater. Certain features of it indicate that there is doubtless a serious disturbance in the metabolism of some of the inorganic elements in the body. Several investigators have recorded a retention of calcium, magnesium and phosphorus and a loss of sulphur in cases of osteitis deformans; but such facts have not yet found widespread recognition in discussions of what is by no means a rare malady. In an investigation by Rabinowitch [1] at the Montreal General Hospital a new, carefully analyzed instance of the upset in the mineral metabolism has been brought to notice. Referring to the general behavior of the inorganic nutrients, Rabinowitch remarks that it would appear that the metabolism of sodium, potassium and chlorine differs from that of other elements; they not only play a small part in the formation of bone but also differ from the other elements in that the body appears to be able readily to adjust itself to any tendencies toward their deficiencies, though they may not always be interchangeable and, in some of their functions, may actually be antagonistic; the "law of the minimum," he adds, appears to be able to assert itself readily. In Rabinowitch's case the patient was practically in equilibrium with respect to sodium, potassium and chlorine. The lack of an effective defensive mechanism against loss of an insufficient supply of calcium, magnesium and phosphorus was shown by the positive balance exhibited for these elements. The basal metabolic rate was normal, as in other cases; hence the involvement of the thyroids in the etiology of osteitis deformans is probably excluded. Other aspects of the study tend to exclude the parathyroids as a cause. Hyposuprarenalism and hypersuprarenalism are also unlikely in the light of the clinical picture and laboratory data. Rabinowitch ventures the guess that osteitis deformans belongs to the so-called metabolic diseases rather than to the infectious disorders. The time is approaching when more sufficiently careful studies will help to solve the baffling problem of etiology.

1. Rabinowitch, I. M.: Metabolic Studies in a Case of Osteitis Deformans, J. Nutrition 5: 325 (July) 1932.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m., over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

September 12. Food and Food Advertising.
September 14. Cancer of the Bowel.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

September 17. Children Who Might Live.

This schedule is based on Chicago daylight saving time, one hour faster than central standard time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—The county medical societies of Lawrence and Randolph were addressed in joint session in July by Drs. John C. Hughes, Hoxie, on treatment of diabetes, and Horace R. McCarroll, typhoid.——Dr. Sidney J. Wolfermann, Fort Smith, addressed the Crawford Medical Society in Van Buren, July 26, on the colon.

CALIFORNIA

Child Development Program.—The first county-wide program in child development work in the state, particularly adapted to farm children, will be projected in Santa Cruz County in a series of meetings, beginning September 12, according to a recent announcement. The general purpose of the conferences is to lay plans for the coordination of all the work in the county pertaining to child development and parent education, it was said. Exhibits and demonstrations will be features of the meetings, at which the chairman of the farm home department, College of Agriculture, University of California, will preside.

Changes in Health Officers.—Dr. Frank M. Lawson, Willows, has been appointed health officer of Glenn County, succeeding the late Dr. Samuel Iglick. Dr. Thomas H. Brown succeeds Dr. Iglick as health officer of Orland. Dr. David M. Kindopp replaces the late Dr. Charles J. Durand as health officer of Colfax. Dr. Kindopp is also health officer of Placer County. Dr. Louis L. Robinson has been appointed health officer of the recently incorporated city of Fairfax. The city of Delano, in Kern County, has transferred its public health work to the Kern County Health Department, of which Dr. Joseph Smith is health officer. Mr. A. Ackerman served as health officer of Delano for many years.

License Revoked—Physicians Placed on Probation.—The license of Dr. Robert H. MacLauchlan, San Francisco, was revoked, July 14, by the state board of medical examiners for violation of probation. Dr. MacLauchlan was placed on probation, July 9, 1931, when his license was restored; it had been suspended, Oct. 30, 1930, for aiding and abetting an unlicensed practitioner (THE JOURNAL, Aug. 8, 1931, p. 395). The following physicians were placed on probation for the periods indicated, after hearings based on record of conviction or plea of guilty in federal court in connection with veterans' bureau claims: Isaac Alexander, Oakland, five years; Reo B. Armitstead, Ventura, one year; William E. Glaeser, San Francisco, one year; Edward Purcell, one year; Fred H. Van Tassell, five years, Oakland, and John R. Vasko, Alameda, three years. Dr. Jiliberto A. Bonaventura, Santa Rosa, was placed on probation for three years, without narcotic privileges, for narcotic violation.

FLORIDA

Mosquito Survey.—What is described as the first investigation of its kind in Florida was begun, August 22, when a group of public health officials started a survey into the mosquito-malaria situation in the state, newspapers reported. The survey began at Tampa, and will continue south to Fort Myers, across the lower Everglades to Miami, then north to West Palm Beach, again into the Everglades area and north to Orlando. Included in the group making the survey are Dr. Mark F. Boyd, Tallahassee, of the Rockefeller Foundation; Dr. Thomas H. D. Griffitts, Albany, Ga., of the U. S. Public Health Service, and Dr. Henry Hanson, state health officer.

GEORGIA

Hospital News.—The Georgia Hospital Association was reorganized at a meeting in Atlanta, July 28. Miss Annie B. Feebeck was elected president, and Mr. George R. Burt, executive secretary.

Society News.—Dr. Henry R. Donaldson addressed the Fulton County Medical Society, Atlanta, September 1, on "The Functionless Gallbladder." Dr. Charles B. Upshaw gave a clinical talk on "Conservative Treatment of Eclampsia."——Dr. Richard B. Wilson, Atlanta, presented a paper on syphilis of the nervous system at the meeting of the society, August 18. ——Dr. Wilborn A. Upchurch, Atlanta, recently addressed the Eighth District Medical Society at Madison, on prostatic resection.

IDAHO

Hospital News.—A twenty-bed hospital was recently opened at St. Anthony, by Dr. Thomas A. Ellison.——Dr. William E. Waldrop, Parma, has been appointed commandant of the Idaho Soldiers' Home, Boise.

State Medical Meeting at Pocatello.—The fortieth annual session of the Idaho State Medical Association will be held at Pocatello, September 16-17, under the presidency of Dr. Joseph Nelson Davis, Kimberly. The following speakers will be included on the program:

Dr. Caroline McGill, Butte, Mont., "Menorrhagia" and "Tissue Diagnosis and the General Surgeon."
Dr. William Dock, San Francisco, "Treatment of Cardiac Irregularity" and "Suggestions as to Cause and Treatment of Chronic Arthritis."
Dr. Frederick L. Reichert, San Francisco, "Interruption of Sympathetic Pathways for Relief of Pain in the Extremities" and "Neuralgia of Certain Sensory and Sympathetic Nerves."
Dr. Platt W. Covington of the Rockefeller Foundation, Salt Lake City, Utah, "State Health Departments."
Dr. Lyle B. Kingery, Portland, Ore., "Ringworm Infection, Clinical Types, Diagnosis and Treatment."
Dr. Dorrell G. Dickerson, Seattle, "Migraine" and "Brain Abscess."
Dr. Alfred W. Adson, Rochester, Minn., "Spinal Cord Tumors, Diagnosis and Treatment."
Dr. Albert Mathieu, Portland, Ore., "Induction of Labor"; "Diet in Its Relation to the Teeth of the Pregnant Woman and Her Offspring."
Dr. Thomas Jones, Cleveland, cancer of the uterus, breast and rectum, discussed separately.
Dr. John M. Flude, Los Angeles, "The Cancer Problem and the Individual Physician."

INDIANA

Personal.—Dr. William Franklin Hughes, Indianapolis, has been appointed head of the department of ophthalmology at Indiana University School of Medicine to succeed the late Dr. Albert E. Bulson. He has been a member of the school faculty since 1903.

License Revoked.—The license of Dr. David B. Harvey, Marion, was revoked by the Indiana State Board of Medical Registration and Examination at a meeting, July 12. Dr. Harvey is serving a life sentence in the Indiana State Prison, having been convicted of murder.

IOWA

Hospital News.—The new Lutheran Hospital, Fort Dodge, erected at a cost of $100,000, was opened recently. It has a capacity of 110 beds.

Personal.—Dr. Herbert R. Sugg, Clinton, has been appointed a member of the state board of health, succeeding the late Dr. Cassius T. Lesan, Mount Ayr.

Society News.—Dr. Walter D. Abbott, Des Moines, among others, addressed the Dallas-Guthrie Medical Society, July 21, on "Injuries to the Brain, Including Traumatic Epilepsy."

KANSAS

Personal.—Dr. Clarence R. Hepler, Columbus, health officer of Cherokee County, has been appointed health officer of Sedgwick County, succeeding the late Dr. Menno H. Hostetler, effective July 1. He has held the former position for twenty-five years.

KENTUCKY

Society News.—At a meeting of the Third District Medical Society in Bowling Green, August 17, speakers were Drs. John H. Blackburn, Bowling Green, on septicemia following appendicitis; Clifton G. Follis, Glasgow, the cystic ovary; Worcester A. Bryan, Nashville, Tenn., enterospasm, and Emmet F. Horine, Louisville, hypertensive heart disease.——At a meeting of the Cave Area Public Health Association at Columbia, August 16, speakers included Drs. Arthur T. McCormack, state health officer, on "The Value of a Full Time Health Department"; Lucius E. Smith, "Newer Phases of Tuberculosis" and Philip F. Barbour, president-elect of the Kentucky State Medical Association, all of Louisville. Drs. McCormack and Smith addressed a public mass meeting in the evening on rural health problems and control of tuberculosis, respectively.

State Medical Meeting.—The eighty-second annual meeting of the Kentucky State Medical Association will be held at the Brown Hotel, Louisville, October 3-6, under the presidency of Dr. Philip F. Barbour, Louisville. Dr. John Lovett Morse, Boston, will deliver the annual oration at a public meeting, Tuesday evening. Dr. Roy Glenwood Spurling, Louisville, will give the oration in surgery on "The Epileptic Problem" and Dr. Charles N. Kavanaugh, Lexington, the oration in medicine, on "Chronic Hypochromic Anemia." The program announces symposiums on anemias and on obstetrics. Among the physicians who will present papers are Drs. Carlisle R. Petty, Lynch, "Treatment of Compound Fractures"; Ernest Owsley Grant, Louisville, "Relief of Prostatic Obstruction Through the Urethra," and William Clark Bailey, Harlan, "Diagnosis and Treatment of Empyema." The last day's program will be presented by members of the faculty of the University of Louisville School of Medicine, among whom will be Drs. Robert L. Woodard, on "Radical Treatment of Joint Tuberculosis"; Edward Speidel, "Clinical Progress in Obstetrics"; Charles W. Hibbitt, "Varicose Veins of the Broad Ligament as Cause of Pelvic Discomfort"; Walter Dean, "Prognosis of Paranasal Sinus Disease," and Bernard Asman, "Anorectal Disease." At the annual banquet at the Brown Hotel, Wednesday, October 5, speakers will be Ira V. Hiscock, C.P.H., associate professor of public health, Yale University School of Medicine, New Haven; Mrs. Walter Jackson Freeman, Philadelphia, president of the Woman's Auxiliary, American Medical Association, and Mrs. Charles E. Oates, North Little Rock, Ark., president of the Woman's Auxiliary, Southern Medical Association.

MAINE

Society News.—Dr. Charles Herbert Best, professor of physiology and assistant professor of hygiene and preventive medicine, University of Toronto Faculty of Medicine, addressed a recent meeting of the Washington County Medical Society at Calais. Papers were also presented at this session by Drs. Ernest H. Bennet, Lubec, and Clifford D. Harvey, Boston, on "Early Diagnosis and Prevention of Cancer" and "Ulcers of the Duodenum and Stomach," respectively.

MARYLAND

Dr. Williams Appointed Health Commissioner.—The appointment of Dr. Huntington Williams as commissioner of health of Baltimore to succeed the late Dr. C. Hampson Jones will take place in October, it is announced. In 1931, Dr. Williams resigned as secretary of the New York State Department of Health, Albany, to become director of health of Baltimore, a new position created to increase efficiency of the city health department (THE JOURNAL, Aug. 22, 1931, p. 545). He had been connected with the New York department since 1922. Since Dr. Jones's death, April 11, Dr. Williams has been acting commissioner of health.

Dr. Mustard to Head New Public Health District.—Dr. Harry Stoll Mustard, director of health education and of child hygiene and public health nursing, Tennessee state department of health, has been selected to take charge of the new public health district which was recently created in Baltimore. Dr. Mustard, who was formerly connected with the U. S. Public Health Service, will also be an assistant professor in the School of Hygiene and Public Health of Johns Hopkins University. He went to Tennessee in 1924 as director of the child health demonstration of the Commonwealth Fund at Murfreesboro. Recently he has been instructor in public health and preventive medicine at Vanderbilt University School of Medicine, Nashville. The health district will be placed in operation, September 15, it was announced. With the creation of this district the training of public health workers has been made possible by a grant of about $25,000 for two or more

years from the Rockefeller Foundation, through the school of hygiene and public health. No radical departures from present public health practices are contemplated under the plan, nor is it proposed to make the residents of the sixth and seventh wards of Baltimore, which constitute the district, the subject of medical experimentation in the public health field, it was stated. The establishment of the district was a recommendation of Dr. Joseph Mountin in his report on the public health survey of Baltimore.

MICHIGAN

Personal.—Malcolm H. Soule, Sc.D., professor of bacteriology, University of Michigan Medical School, Ann Arbor, will present a paper on "Microbic Dissociation" at the meeting of the International Society for Microbiology in Milan, Italy, in October.

Hospital News.—A new receiving hospital for the Newberry State Hospital, Newberry, to cost $364,000, has been authorized. The building is expected to accommodate 100 patients.——Two buildings, constituting the second unit of the Ypsilanti State Hospital, were formally dedicated, July 27, by Governor Brucker. It is expected that they will give an added capacity of 450 beds to the state institution.

Society News.—Dr. J. Duane Miller, Grand Rapids, read a paper on "Modern Viewpoints on the Etiology and Treatment of Female Disease" before the Berrien County Medical Society, August 24. Dr. Alexander M. Campbell, Grand Rapids, was to have given the paper but was unable to attend.——Dr. Roscoe L. Sensenech, South Bend, Ind., addressed the Berrien and Cass county medical societies, July 28, on "A Review of Gastro-Intestinal Symptomatology—Diagnosis and Treatment."

Peninsula Society Meeting.—Dr. Emil H. Webster, Sault Sainte Marie, was elected president of the Upper Peninsula Medical Society at its meeting in Sault Sainte Marie, August 11-12. The society will meet in Escanaba in 1933. Among the speakers were Drs. Edgar V. Allen, Rochester, Minn., on "Thrombo-Angiitis Obliterans and Arteriovenous Fistula"; George H. Gardner, Chicago, "Some Newer Phases of Gynecology"; Louis J. Hirschman, Detroit, "The Anal Canal as a Focus of Infection." Dr. Carl F. Moll, Flint, president, Michigan State Medical Society; Dr. James Milton Robb, Detroit, president-elect, and Dr. Clyde C. Slemons, state health commissioner, among others, made five-minute talks at the annual banquet, at which former Governor Chase S. Osborn, Sault Sainte Marie, made the principal address. Dr. Wyllys A. Manthei, Lake Linden, retiring president of the society, was toastmaster.

MISSISSIPPI

Cooperative Health Work Inspected.—Dr. Marta Robert, San Juan, P. R., chief division of child hygiene, Puerto Rico Department of Health, spent a week in Mississippi in July observing and studying the maternal and infant hygiene activities of the state board of health. In 1931, the Commonwealth Fund selected Mississippi for cooperative health work and established full time health units in Pike and Lauderdale counties. Other recent visitors to observe the health program of Mississippi were Dr. Percy L. Querens, Tulane University Graduate School of Medicine, New Orleans; Dr. Taliaferro Clark, U. S. Public Health Service, Washington, D. C.; Dr. C. J. Hollister, D.D.S., department of health of Harrisburg, Pa., and Carl E. Buck, Dr. P.H., American Public Health Association, New York.

NEBRASKA

Acting Dean Appointed.—The Rev. John J. McInerney, S. J., regent of Creighton University School of Medicine, Omaha, will serve as acting dean of the school, assisted by Drs. Bryan M. Riley, professor of medicine, and Herbert F. Gerald, professor of pharmacology, it has been announced. Dr. Herman von W. Schulte, dean since 1918, died July 13. Dr. Riley succeeds Dr. Schulte as chairman of the administrative board.

NEW JERSEY

Society News.—Dr. Jesse O. Arnold, Philadelphia, addressed the Cumberland County Medical Society, July 12, at Jericho, on treatment of eclampsia.——Dr. Edgar Burke, Jersey City, discussed "Unusual Abdominal Operations" before the Union County Medical Society, meeting at Summit, July 13. ——The state department of health has suspended the publication of its bulletin, *Public Health News*, for an indefinite period. A mimeographed news letter will take its place.

Illegal Practitioners Prosecuted.—Sixteen persons have been convicted of practicing medicine without a license within recent months, according to a report of the activities of the New Jersey state board of medical examiners. Among them were:

Alexander Zabo, who conducted an herb steam bath establishment in New Brunswick.
Charles B. Richardson, a licensed osteopath who exceeded his osteopathic license by giving electrical treatments.
Yuk Sun Chin, a Chinese herb doctor of Hoboken.
John S. Hussa, an electrotherapist of Asbury Park.
Samuel A. Weinraub, Jamesburg; Benjamin Faunce, Riverside; Isadore M. Greenburg, Newark, all druggists.

NEW YORK

Personal.—Dr. Mary C. Conant is reported to have resigned from the staff of the Newark State School, Newark, after twelve years of service there and nineteen in the service of New York State.——Dr. Walter A. Leonard, Cambridge, has been appointed a member of the Public Health Council by Governor Roosevelt. He succeeds Dr. Stanton P. Hull, Troy.

Foreign Medical Schools Recognized.—The New York State Department of Education has listed for the guidance of students wishing to study medicine abroad the medical schools that meet its requirements for licensing examinations. The approved schools in Canada are those of Dalhousie University, Halifax; McGill University, Montreal; Queens University, Kingston, Ont.; Laval University, Quebec, and the universities of Toronto, Alberta (at Edmonton) and Western Ontario (at London). Medical faculties of all governmental universities in Austria, Germany, Holland, Hungary and the Scandinavian countries and all those that are part of English, Irish and Scottish universities are on the list. In order that courses in medicine in these foreign schools may be accepted, it is necessary that the students take two years of premedical work, including the required sciences, before beginning professional study.

Minimum Death Rates.—The death rate for tuberculosis in New York for June was the lowest ever recorded for the month, 64 per hundred thousand of population, according to *Health News*. Infant mortality (48) was the lowest ever recorded for June with the exception of 1931, when the rate was 44. The death rate from diarrhea and enteritis in children under 2 years of age was 4.6, the lowest ever recorded in any month and one fifth of the rate ten years ago (22.3). Maternal mortality was the lowest for June in six years (46.4 per 10,000 total births). Death rates from measles, whooping cough and diphtheria were low, but the mortality from scarlet fever was the highest in June in ten years. The death rate from automobile accidents (69.8) was also a record, the lowest for any June since 1907. On the other hand, death rates from cancer and diabetes were the highest ever recorded with the exception of June, 1930, and mortality from heart disease was the highest except for June, 1928. The suicide rate (21.6) was the highest ever recorded for June.

New York City

Friday Afternoon Lectures.—The fall series of Friday afternoon lectures for the Medical Society of the County of Kings, Brooklyn, has been arranged as follows:

October 7, Dr. Harrison S. Martland, Newark, N. J., "Interesting Pathological Cases from a Diagnostic Viewpoint."
October 14, Dr. Fred Wise, "Common Infections of the Hair and Hair Follicle."
October 21, Dr. Reginald Fitz, Boston, "Treatment of Diabetes: Its Importance, Insulin, Coma and Common Complications and Their Treatment."
October 28, Dr. Russell L. Haden, Cleveland, "Purpura and Pathological Hemorrhage."
November 4, Dr. Edward M. Livingston, "Diagnosis of Diseases of the Abdomen."
November 11, Dr. Morris Edward Davis, Chicago, "Toxemias of Pregnancy."
November 18, Dr. Milton G. Wasch, Brooklyn, "Roentgen Therapy: Its Modern Application in Benign and Malignant Diseases, Indications and Contraindications."
December 2, Dr. Smith Ely Jelliffe, "Value of Psychoanalytic Understanding in Medicine."
December 9, Dr. Albert D. Kaiser, Rochester, "When Are Children's Tonsils Abnormal? How Should They Be Treated?"
December 16, Dr. Benjamin Kramer, "Prophylaxis and Therapy of the Most Important Infectious Diseases of Children."

University News.—Dr. Harold J. Stewart has been appointed associate professor of medicine at Cornell University Medical College and attending physician at New York Hospital. Dr. James Lionel Alloway has been appointed assistant professor of bacteriology in the medical college.——The New York Post-Graduate Medical School of Columbia University will offer to medical graduates a week's intensive course in the theory and practice of traumatic surgery, October 10-15, under the direction of Dr. John J. Moorhead.

Annual Fracture Demonstrations.—The New York and Brooklyn Regional Fracture Committee of the American College of Surgeons will give its annual course on fracture treatment, October 31 to November 5. Clinics will be held at

eight leading hospitals. Lectures will cover diagnosis and treatment of all types of injuries to the bone, with demonstrations of actual cases. There will also be symposiums on bone repair, operative treatment of fractures, delayed union and care of compound fractures. Information may be obtained from Dr. Fenwick Beekman, 121 East Sixtieth Street, New York, secretary of the committee.

OHIO

Personal. — Dr. Robert H. Grube, Xenia, will retire as health officer of Greene County, October 1, it is reported, after several years' service. He is at present president of the Greene County Medical Society.——Dr. Elias Dalton Peelle, Wilmington, has been appointed head football coach at Wilmington College for a period of one year.

Hospital News.—A new building for the Bucyrus City Hospital was dedicated, July 11; it has accommodations for thirty-seven patients. The old hospital will be sold and removed from the grounds.——The cornerstone of Lima Memorial Hospital, recently completed at a cost of $500,000, was laid, August 22, with ceremonies conducted by Masons of Lima. The new building replaces the old Lima Hospital.——The nurses' training school at the Home and Hospital, Findlay, will be suspended, October 1, on account of financial conditions, it is reported.

Society News.—At a meeting of the Adams County Medical Society, West Union, August 17, speakers were Drs. Frederick C. Leeds, Winchester, on hemorrhagic pancreatitis; William G. Phillips, Maysville, Ky., "Preoperative and Postoperative Care of the Surgical Patient" and Martin L. Purdin, West Union, gastro-enteritis.——Dr. Robert Conard, Wilmington, addressed the Clinton County Medical Society, August 2, on examination of the lungs.——Dr. Townsend H. Dickinson, Dayton, addressed the Greene County Medical Society, Xenia, August 4, on "Intestinal Infection in Children."

PENNSYLVANIA

State Medical Meeting in Pittsburgh.—The eighty-second annual session of the Medical Society of the State of Pennsylvania will be held in Pittsburgh, October 3-6, under the presidency of Dr. Charles Falkowsky, Jr., Scranton. Guest speakers announced include:

Dr. Frank H. Lahey, Boston, on "Changing Concepts in Treatment of Peptic Ulcer."
Dr. Russell L. Cecil, New York, "Laboratory Methods in the Diagnosis and Treatment of Arthritis."
Dr. Thomas M. Rivers, New York, "Diseases Due to the Filtrable Viruses."
Dr. John F. Erdmann, New York, "Recognition and Treatment of Postoperative Complications."
Dr. George E. Brown, Rochester, Minn., "Diseases of the Peripheral Blood Vessels."
Dr. William Darrach, New York, "Conditions Causing Delay or Complications in the Healing of Fractures."
Dr. Bernard Samuels, New York, "Intra-Ocular Tumors."
Dr. Samuel J. Kopetzky, New York, "Otitic Complications as They Occur in Everyday Otology."
Dr. Jesse R. Gerstley, Chicago, "Infant Nutrition."
Dr. Roger H. Dennett, New York, "Nirvanol Treatment of Chorea."
Dr. Oliver S. Ormsby, Chicago, "Neurodermatitis."
Dr. Joseph F. McCarthy, New York, "Progress in Prostatic Surgery."

Dr. Albert H. Freiberg, Cincinnati, will give an address at the opening session on "Economic Implications of Modern Medicine," and Dr. Falkowsky will give the presidential address following his installation. There will be symposiums on cardiovascular disease, head injuries, surgery of the colon, disease of the thyroid and tumors of the kidney.

Philadelphia

Personal.—Dr. Edward Quin Thornton, associate professor of materia medica at Jefferson Medical College, has been appointed Sutherland M. Prevost professor of therapeutics, to succeed the late Dr. Elmer H. Funk.——The University of Vienna has bestowed on Dr. George W. Mackenzie a gold honor medal with a diploma of the university in recognition of his work in diseases of the eye, ear, nose and throat.

Director Appointed for Cox Institute.—Dr. Cyril N. H. Long, assistant professor of medical research, McGill University Faculty of Medicine, Montreal, has been appointed director of the George S. Cox Medical Institute for research in diabetes at the University of Pennsylvania Hospital. Dr. Long, who has been engaged in investigations of diabetes and diseases of metabolism at McGill and at University College, London, for the past eight years, will also serve as assistant professor of medicine. The Cox Institute was opened, March 18, under the temporary direction of Dr. J. Harold Austin, John H. Musser professor of research medicine in the school of medicine (THE JOURNAL, April 16, p. 1388). The staff includes at present Drs. Russell Richardson, who is in charge of the clinic service, Francis D. W. Lukens, Frederick W. Sunderman and Morris A. Bowie.

SOUTH CAROLINA

Society News. — At a meeting of the Eastern Carolina Medical Association, Myrtle Beach, August 11, speakers included Drs. George H. Bunch, Columbia, on "Surgical Treatment of Pulmonary Tuberculosis"; James M. Northington, Charlotte, N. C., "Doctors Should Resume Leadership in Scientific, Civil and Political Affairs" and William R. Barron, Columbia, "Transurethral Prostatectomy."

Roentgen Ray Society Organized.—South Carolina radiologists recently organized the "South Carolina X-Ray Society" at a meeting in Columbia. Dr. Floyd D. Rodgers, Columbia, was chosen president and Dr. Robert B. Taft, Charleston, secretary. Charter members were Drs. Percy D. Hay, Jr., Florence; Oscar D. Baxter, Sumter; Hillyer Rudisill, Jr., Charleston; William S. Judy, Greenville; Thomas A. Pitts, Jr., Columbia; William M. Sheridan, Spartanburg; Frank R. Wrenn, Anderson; Malcolm Mosteller, Columbia; Rodgers and Taft. Meetings will be held in conjunction with the annual meetings of the South Carolina State Medical Association.

WASHINGTON

Personal.—Friends and students of John Weinzirl, Dr.P.H., of the department of bacteriology, University of Washington, Seattle, gave a banquet in his honor recently, celebrating twenty-five years of service to the university.——Dr. Casper W. Sharples, Seattle, was recently reelected president of the Washington Society for Mental Hygiene.——Dr. William O. Copps, Seattle, has recently been appointed medical criminologist for the city police department.

Society News.—A recent meeting of the Klickitat-Skamania Counties Medical Society was addressed by Drs. Alexander H. Peacock, Seattle, on medical economics; John M. Blackford, Seattle, gallbladder disease, and Frederick H. Brush, Yakima, nephritis. —— The Walla Walla Valley Medical Society celebrated its fiftieth anniversary and at the same time the fiftieth anniversary in medical practice of Dr. Howard R. Keylor, Walla Walla, at a banquet, June 25.

WEST VIRGINIA

Society News.—Dr. Harry Ryerson Decker, Pittsburgh, addressed a joint meeting of the Monongalia and Preston county medical societies at Hopemont, July 26, on "Surgical Procedure in Suppurative Conditions of the Chest."

New Bridge over the Kanawha.—The Kanawha Medical Society recently unveiled a tablet naming a new bridge over the Kanawha River in honor of Dr. Spicer Patrick, a pioneer of Kanawha County. He lived from 1816 to 1884. General Mason M. Patrick, a grandson of Dr. Patrick and formerly chief of the air service of the United States Army, accepted the tablet for the family.

WISCONSIN

Hospital News.—A hospital annex to the National Soldiers' Home, Milwaukee, recently completed at a cost of $300,000, was opened, August 22. It increased the capacity of the home by 298.——A new building providing sixty beds for St. Camillus Hospital, Milwaukee, was dedicated recently. The former capacity of the hospital was nineteen beds.

University News.—Dr. Rudolf J. Noer, Wabeno, has been appointed assistant in histology at the University of Wisconsin Medical School, Madison, and Dr. Robert C. Bunts, Madison, assistant in pathology. Walter J. Meek, Ph.D., professor of physiology and assistant dean of the medical school, has been appointed a member of the National Research Council for the division of medical science. Dr. Philip Levine, of the staff of Rockefeller Institute, New York, has been appointed instructor in bacteriology.

GENERAL

Narcotics Limitation Convention Not Ratified. — The United States is the only manufacturing country which has thus far ratified the treaty drawn up at the international conference on limitation of the manufacture of narcotic drugs, held in Geneva in 1931 under the League of Nations, according to a recent announcement from Geneva. Nicaragua, Persia, Peru and Portugal, all nonmanufacturing countries, have ratified the convention. Unless twenty-five countries, including four manufacturing countries, have ratified the convention before April 13, 1933, it cannot come into force. Other manufacturing countries are France, Germany, Great Britain, Japan, The Netherlands, Switzerland and Turkey.

Delegates to Goiter Conference. — Plans for assembling an American delegation to the Second International Goiter Conference in Berne, Switzerland, in August, 1933, were adopted by the American Association for the Study of Goiter at its annual meeting in Hamilton, Ont., in June. It was agreed to designate as delegates at large all members of the association who could attend the conference. In addition, delegates from each of twelve geographic sections of the United States have been appointed and others from Canada are to be selected. The United States Army and Navy, the Public Health Service and the various medical and surgical organizations, as well as the leading goiter clinics of the United States and Canada, have also been invited to send delegates. It was decided to invite the conference to the United States for its third session in 1937. Subjects for discussion at the conference will be limited to the hyperthyroses and etiology, with the possible addition of prophylaxis, it has been announced.

Conference on Tuberculosis. — The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Sanatorium Association will meet in Indianapolis at the Claypool Hotel, September 12-14. According to the tentative program, sessions will be held separately for the two groups. Speakers will include Drs. Ralph B. Bettman, Chicago, "Thoracoplasty —Treatment of Choice When Sanatorium Care Is Unsuccessful"; Jay Arthur Myers, Minneapolis, "Tuberculosis Infection"; Cameron Haight, Ann Arbor, Mich., "Differentiation of Lung Abscess and Pulmonary Tuberculosis"; Allan J. Hruby and Henry C. Sweany, Chicago, "Primary Carcinoma of the Lung"; Arville O. DeWeese, Kent, Ohio, "Tuberculosis in College Health Service"; James A. Edwards, Oakdale, Iowa, "Employment of Tuberculous on Sanatorium Staffs," and George S. Bond, Indianapolis, "Hyperthyroidism and Tuberculosis." Tuberculosis in industry will be the subject of one symposium. Dr. Morris Fishbein, editor of THE JOURNAL, will address the annual banquet, Tuesday, September 13, on "The New Frontier in Tuberculosis." Stanley Coulter, Ph.D., dean emeritus, School of Science, Purdue University, Lafayette, Ind., will give the address of welcome.

American Physical Therapy Association. — The forty-second annual meeting of the American Physical Therapy Association will be held in Detroit, September 28-30, under the presidency of Dr. Edwin N. Kime, Indianapolis. Among physicians who will present papers are the following:

Dr. Frank H. Krusen, Philadelphia, "Education in Physical Therapy."
Dr. Curran Pope, Louisville, Ky., "Personal Studies in Pyretotherapy."
Dr. Israel Bram, Philadelphia, "Toxic Goiter: The X-Ray as a Supplement in Nonoperative Therapy."
Dr. Richard Kovacs, New York, "The Cold Quartz Lamp."
Dr. Lewis J. Silvers, New York, "Electrosurgery in Rhinolaryngology."
Dr. Winfield Scott Pugh, New York, "Electrosurgery of the Vesical Neck."
Dr. Walter E. Pennington, Indianapolis, "Diverticulosis of the Gastro-Intestinal Tract."

Government Services

Army Officers' Pav Reduced

Medical officers of the army, navy, public health service, veterans' bureau and all other branches of the government service will suffer a reduction of 8⅓ per cent in their salaries under the provisions of the economy law recently enacted by Congress. In addition, the annual thirty-day leave with pay heretofore allowed will be suspended during the current fiscal year. In lieu thereof such officers will be required to take an annual leave of twenty-four working days on a basis of two working days per month without pay. Medical officers in the army, navy and public health service suffer in addition a reduction in rental allowance from $20 to $18 per room, and their subsistence allowance will be reduced from 60 cents a day to 52 cents a day. Retired medical officers will suffer a reduction of 8⅓ per cent in their retirement compensation. This will affect all retirement pay in excess of $1,000 per annum. There is also a provision in the act which limits pay to $3,000 per annum to all persons receiving pay on account of former service as commissioned officers who are also holding civil service positions, appointive or elective, under the U. S. government. When the salary from either source is more than $3,000, such persons may elect to receive pay of the civil office or retirement pay. Under a decision of Comptroller General J. R. McCarl, interpreting the economy law, it is held that no officer shall be furloughed without pay for more than five days in any one calendar month without the consent of such officer. There is no change in the existing law with reference to officers when absent on account of sickness or disability or lawfully absent from duty and awaiting orders.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 29, 1932.

The Undiminishing Maternal Mortality

In previous letters the concern caused by the undiminished maternal mortality, while all other mortalities have declined, has been mentioned. A committee of eminent obstetricians appointed by the government to advise on the application to maternal mortality and morbidity of the medical and surgical knowledge at present available has presented its final report. In 48 per cent of the cases a "primary avoidable factor" in the form of omission or inadequacy of antenatal examination, error of judgment in management, lack of facilities, or negligence in following advice, was found. In 1930 there were 4.4 deaths per thousand live births and the figure for puerperal sepsis was 1.92.

PUERPERAL SEPSIS

Sepsis was responsible for 18 per cent of the deaths. The majority were due to sporadic infection and could have been prevented by a conscientious technic. In a fifth of the cases the labor was difficult, and serious injury to the maternal tissue was the most important factor in determining fatal infection. In not less than 85 per cent of the normal cases in which sepsis occurred the agent was Streptococcus pyogenes. In a large proportion, infection was due to transfer of the microbe from the throat or nose of some one in attendance during the first few days of the puerperium. This may occur by droplet spray directly on the vulva or indirectly from hands, instruments or dressings. In some cases the streptococci are conveyed by the mother's fingers from her own throat or nose; also they may have been originally present in her genital tract. In sepsis following difficult labor there is in addition to these modes of infection an increased chance of endogenous infection by anaerobic streptococci or by B. coli, either present in situ or reaching the genital tract from the blood stream. To minimize these dangers the following are recommended: wearing of masks over both nose and mouth by all in attendance on the patient and by others present, use of rubber gloves with scrupulous antiseptic precautions, discouragement of talking in the room of confinement, and avoidance of vaginal examination after rupture of the membranes in a straightforward case.

OTHER CAUSES OF DEATH

In regard to toxemias, the examination of the urine and estimation of the blood pressure during pregnancy are not as effectively carried out as they should be. Midwives should be trained to determine blood pressure. Warning hemorrhage is not sufficiently regarded, and physicians do not make sufficient use of intravenous injection of blood or of transfusion. In the case of toxemia and of warning hemorrhage the woman should be placed in an institution more often and earlier than at present.

IMPERFECTIONS OF THE MATERNITY SERVICE

Imperfections of the maternity service include lack of facilities for training students, inadequate facilities for postgraduate instruction, too little instruction of young obstetricians and gynecologists to establish themselves in nonteaching provincial centers, and imperfect instruction of midwives in antenatal care and nursing methods.

MATERNITY HOSPITALS

Cases of sepsis, whether arising in the hospital or admitted from the outside, should not be treated in a maternity hospital unless an entirely separate block, separate nursing and ward staff, and separate staff accommodation are provided. For emergency or other cases which may be a source of danger on account of potential sepsis, special provision (separate small

wards and labor wards with special allocation of staff) should be made. Cases of abortion should not be admitted to ordinary wards. To facilitate specialist treatment of nonobstetric conditions associated with pregnancy and childbirth new maternity accommodation should be associated with general hospitals.

Parental Alcoholism Has No Effect on Offspring

An important report entitled "Alcohol and Inheritance" has been issued by the medical research council. Before the war, Prof. C. R. Stockard of Cornell University published in America the result of experiments to determine the effects produced by alcohol on the fecundity of guinea-pigs and the quality of their offspring. His conclusions, which have been widely quoted, were that the daily administration of alcohol, in quantities sufficient to produce intoxication, caused a fall in the number of births and a liability to weak and defective offspring. Miss F. M. Durham, working at the National Institute for Medical Research, has made a large number of experiments on guinea-pigs, with an adequate number of controls living under identical conditions except for the administration of alcohol. Miss H. M. Woods has collaborated in the statistical analysis. The conclusions are quite contradictory to those of Professor Stockard. The litters from alcoholic parents or their descendants were as numerous and as heavy as in the control experiments. Deformities did not occur more frequently than in the control group, and the offspring for several generations showed no transmitted defects, such as described by Professor Stockard. It is pointed out that his experiments were performed in the days when the science of dietetics was not so advanced, and that supervision of the diet of the guinea-pigs was much more thorough in the present series. For example, a great point was made about the supply of cabbages. It is suggested that in the absence of cabbage from the diet it is possible that alcohol may have affected the breeding power. The guinea-pigs received their alcohol by inhalation while sitting in cages in a special tank. Their general health remained excellent despite daily intoxication following exposures of two or three hours. Thus there was no evidence of injury to the germ plasm.

Birth Control

At the annual congress of the Royal Sanitary Institute, Sir Thomas Horder, who was to have opened the debate on birth control but was unable to be present, contributed a paper in which he described birth control as the most practical method of eugenics available. Fundamentalists believed that it was wrong to interfere with nature, but it was too late in the course of evolution to revive these old ideas. Better and more trustworthy methods of birth control must be discovered. He regarded indiscriminate child bearing as a disease of the body politic and thought that there was need for a course of instruction in this subject. Large numbers of physicians were qualifying every year who had never received any instruction in the matter.

Mr. Harold Chapple, gynecologist, of Guy's Hospital, said that every married couple should have the right and understand the means whereby it would be possible for them to have children at such intervals as they thought fit, having regard to their health, circumstances and other views on the subject. He repudiated the idea that the object of the birth control movement was to make vice easy. It was an intensely serious movement. Thousands of women with heart, lung or kidney touble were dependent on birth control. Were they to be refused any help in a matter of life and death? Half of his patients at Guy's Hospital would disappear under sane birth control.

A clergyman, Canon E. C. W. Rose, said that he was not so sure that birth control would promote public morals. Married love was not dependent on nor limited by physical acts. Human love involved self control. Contraception provided physical satisfaction which was purely temporary at the cost of eliminating those qualities which alone made married love perfect. Approval of the practice of birth control would lead to great abuse among the unmarried.

The Waste of Drugs Under Medical Socialism

In a discussion on the panel system, Mr. W. M. Mashall, secretary of the Scottish Association of Insurance Committees, said that medical authorities proclaimed that "the day of the bottle is passing, and the pathetic belief that every visit or consultation should imply the writing of a prescription is disappearing." Yet under the national insurance scheme more than 50 million prescriptions were issued to insured persons in England and Wales—surely an appalling figure. Physicians had stated that nine tenths of their prescriptions were futile and were merely provided to please the patient. The insured population of Glasgow was 25 per cent more than that of Manchester, yet last year the prescriptions issued by the Manchester physicians cost $400,000 and in Glasgow only half that, although there was just as much illness in Scotland as in England. The demand for medicine in England was a habit rather than a necessity, and the physicians had here a great opportunity for economy.

PARIS

(From Our Regular Correspondent)

Aug. 3, 1932.

The New Site for the Paris Faculty of Medicine

For a number of years, the lack of space for the growing needs of the laboratories and the constant increase in the number of students at the Faculté de médecine de Paris has made a change of site more and more imperative. The Rockefeller Foundation donated, some time ago, 150,000,000 francs ($6,000,000) for the purpose, on condition that the central government would contribute an equal sum. All that remained to do was to decide on the new site, which would have to be large and yet not too far distant from the residential sections of Paris, to take account of the needs of the professors and their pupils. That is a double requirement difficult to realize. A preliminary meeting was recently held at the ministry of public instruction, under the chairmanship of the minister himself, which was attended by Professor Balthazard, dean of the Faculté de médecine; Professor Roussy, his assistant; Mr. Carléty, rector of the University of Paris; Mr. Cavalier, director of higher education, and representatives of other ministries. The choice fell on a tract of land (formerly used for military purposes) bordering on the southern line of the old fortifications, which is a long distance from the center of Paris. The plan was long discussed but, unfortunately, rejected to locate the new Faculté de médecine on the site of the present Halle aux vins, which, in that case, would have been transported outside of Paris. This site would have been better for the university buildings. Located on the bank of the Seine, alongside the Institut médico-légal, it would not have been too far from the other *facultés* where are installed the publishers of medical works, the shops of the manufacturers of instruments, and the rooming houses for students. The selection of the more distant site will mean a big loss to the interests mentioned. But, as so often happens in France, it was thought necessary to protect the powerful interests of the wine merchants.

Influence of Alcoholism on the Development of Tuberculosis

The predisposing action of alcoholism on the development of tuberculosis has been asserted for some time by French clinicians. It has been one of the most important "weapons" employed in the crusade against alcoholism, and Professor Debove, while he was dean of the Faculté de médecine de Paris, secured permission from the management of the Assistance publique à Paris to put on the walls of all the consultation rooms of the hôpitaux de Paris a placard with these words: "Tuber-

culosis is contracted in the cabaret." These placards, after the lapse of forty years, have finally disappeared, at the request of the syndicate of the dealers in alcoholic beverages, which urged that the practice was harmful to their interests. Dr. Arnould, director of the Comité national de défense contre la tuberculose, has recently published a statement in the *Presse médicale* to the effect that the foregoing warning was an exaggeration intended to shock the mind into submission. In order not to offend his compatriots, he cited only German statistics in support of his statements. During the decade from 1920 to 1929, the number of cases of cirrhosis of the liver was doubled; the number of cases of drunkenness or alcoholism treated in the hospitals was trebled, while the number of patients treated in the asylums for alcoholic psychosis had increased sixfold. During the same period, tuberculosis mortality, on the contrary, decreased one third. During the years 1922 and 1923, in particular, the figures for alcoholism were at a standstill, and even tended downward, whereas the mortality of tuberculosis increased. The explanation is easy. This was the period of deflation in Germany. The severe economic conditions not only led the population to restrict the consumption of alcoholic beverages but also its regular diet, and it was the latter fact that favored the development of tuberculosis. At present, alcoholism is again increasing, and tuberculosis is again decreasing. Mr. Arnould concludes that the crusade against alcoholism is needed to prevent the degeneration of the race and the development of dangerous psychoses, but that this crusade has no influence on the diminution of tuberculosis, which cannot be brought about other than by the amelioration of general hygienic conditions and the suppression of contagion. There is only one criticism to offer against Dr. Arnould's argumentation, and that is that the statistics that he utilized cover only persons aged 30 to 70. That is, to be sure, the period in which alcoholism makes its chief inroads on the organism; but tuberculosis is most frequent in persons under 30 years of age.

Hygiene in the Artificial Silk Industry

During the past thirty years, the artificial silk industry has developed rapidly in France (where it originated) and in other countries. The various processes employed necessitate the use of many chemical products, some of which have been found to be harmful to the workers and even to persons residing in the vicinity of the factories. Messieurs Cazeneuve, A. Morel and de Leeww recently completed an inquiry into the situation and presented it to the Academy of Medicine. The untoward incidents observed are due to the effects of alcohol, ether, acid and alkaline substances, hydrogen sulphide and carbon disulphide. Mr. de Lapersonne observed cases of conjunctivitis and keratitis resulting from the projection of droplets of sulphuric acid. It is evident, therefore, that extensive measures of protection for the workmen and persons residing in the vicinity of artificial silk plants are urgently required. The authors emphasize the need of apparatus for the mechanical absorption of the gases and the irritating products in the workrooms, together with ample ventilation. These measures have improved conditions to a great extent.

Value of the Radiologic Examination with the Patient in a Vertical Position, Head Downward

It appears that the disarrangement of the organs that results when a patient is placed in a vertical position, head downward, may bring about new and interesting observations during a radiologic examination. At a meeting of the Société de radiologie médicale de France, Dr. Henri Béclère reported recently on his success with this new method of radiographic research. By the "feet toward the ceiling" position, the author does not mean the Trendelenburg position; he means a vertical position with the head downward. The patient is held firmly to the bascule operating table by means of a special stirrup bandage provided with straps that pass across the feet and the knees of the patient. With his hands, the patient holds on to the bars at each side of the table. The region to be radiographed has been previously well studied, for the purpose of the examination in the vertical position is to procure additional information. The fluorescent screen is put in place, and the operating table is raised, with one or two stops, to a vertical position, to see that the screen is in the proper position and to assure the fixation of the patient. When the table is in a vertical position, a roentgenogram is made and the table is then lowered to a horizontal position. The operation requires only a few seconds and the patient is not inconvenienced. There are few regions of the body that, when radiographed under these conditions, do not furnish new and interesting views to aid the diagnosis.

Personal

Dr. Sparks, an American dentist in Paris, has been chosen commander of the department of the American Legion of France. A graduate of the University of Indiana, he took part in the war, at first in the French army medical corps, then as captain in the American army, for which service he was accorded the Cross of the Legion of Honor.

Dr. Camille Delezenne has died at the age of 70. A former associate professor at the Faculté de médecine of Montpellier, he had been appointed professor of physiology at the Institut Pasteur de Paris and had become a member of the Academy of Medicine. His principal researches have been on cytotoxic serums and the hormones of the pancreas. He had just succeeded in isolating insulin when the publication of his article on the subject was nullified by that setting forth the results of the researches of the Canadian investigators.

ITALY

(From Our Regular Correspondent)

July 15, 1932.

The Congress of Medical Radiology

The Società italiana di radiologia held its tenth congress in Parma, under the chairmanship of Prof. Armando Rossi of the University of Parma.

Prof. Raffaele Paolucci, director of the Clinica chirurgica of Parma, delivered the opening address, taking "Pulmonary Abscess" as his subject. Accepting the classification of Baumgartner, which is similar to that of Manfredo Ascoli, the speaker divided pulmonary suppurations into (1) simple abscess of the lung, (2) abscess fetid from the start, (3) chronic suppuration, (4) localized gangrene, and (5) bronchiectasis complicated by abscess. For each of these types he pointed out the most appropriate treatment.

Professor Vallebona of Genoa presented a paper on the radiology of acute pulmonary diseases. Speaking in general of acute pulmonary and bronchopulmonary inflammatory processes, the speaker showed the difficulty of making an etiologic distinction between them, and particularly an anatomopathologic and an anatomoradiologic division. A clinical division is more practical, one of the disorders in question, crupous pulmonitis, having a typical and characteristic clinical course that is generally sufficient for an exact diagnosis of the disease. The speaker described then the radiologic symptomatology of crupous pulmonitis, distinguishing the symptoms of the initial stage of the disease, the symptoms of the crisis, and the aspects of the period of resolution. He dealt with the involvement of the pleura in an acute pneumonic process, and with acute pulmonary processes in anomalies of the lung (lobe of the azygos vein), and considered the radiologic characteristics of pulmonitis in the child. In speaking of bronchopulmonitis, he brought out that the radiologic aspects of this disorder are less typical than those of pulmonitis. Nevertheless, he described several special forms, such as influenzal bronchopulmonitis, postoperative bronchopulmonitis, and the types due to toxic gas and to the

Friedländer bacillus. Of the complications and sequels of acute pulmonary processes, the attention of the radiologist is attracted chiefly by abscess and by pulmonary gangrene, disorders that may also be primary. Often it is impossible to make a frank differentiation between the two diseases; the differential diagnosis must take account also of the possibility (although rare) of an interlobal pleuritis. According to the speaker, the importance, in acute diseases of the lungs, of a radiologic examination of the patient has been heretofore too little recognized.

Nicotra of Catania discussed the radiology of chronic pulmonary diseases, distinguishing morbid forms due to (1) an inert pathogenic agent and (2) a biologic pathogenic agent. The former are characterized also in the roentgenogram by tissue changes of the fibrous type; in the absence of exudative phlogosis demonstrable radiologically. Pneumonoconiosis, which is the most characteristic of the disorders due to an inert pathogenic agent, has as an elementary change the pneumonoconiotic nodule, the accumulation of which leads to complex conditions. The inhaled particles of dust are deposited chiefly in the more cortical, subpleural areas of the lung—in the axillary and paraxillary regions. In miliary tuberculosis, however, the foci are distributed uniformly, with greater density in the parahilar regions.

The diseases due to an etiologic biologic agent are characterized by inflammatory exudative processes. Of these the speaker distinguished four groups: those due to (1) animal parasites, (2) vegetable parasites, (3) syphilis and (4) tuberculosis. For each group he gave the principal radiologic characteristics and pointed out that syphilis causes a notable fibrous hyperproduction, and the forms of a tuberculous nature occur as a peculiar feature of bronchiogenic metastatic dissemination. In tuberculosis, the radiologic aspects of a single focus represent initial manifestations (primary infection and reinfection, Kuss-Ghon focus, Assmann infiltrate, lobitis). In the group of manifestations with multiple foci, the speaker distinguished those with foci all alike and those with foci of various aspects. Of the manifestations with like foci, he described miliary tuberculosis and tuberculosis acinonodosa. Among those with manifold and different radiologic aspects, he distinguished cavitary formations and metastasis with acinonodose foci and cavitary formations and metastasis with lobular foci (bronchopulmonitis). In a general way, it may be stated that aspecific diseases do not give rise to cavitary or metastatic radiologic images, whereas these are characteristic of tuberculosis. Following the general discussion of the papers, the society passed a resolution demanding of the Federazione nazionale per la lotta antitubercolare that a compulsory radiographic record card be introduced, so that specific initial lesions found in school children may be recorded therein from early childhood.

Vespignani of Padua presented the official paper on radiology of the disorders of the small intestine. He considered, for the purposes of his study, the subvaterian portion of the duodenum as the beginning of the small intestine and the ileocecal valve as the distal extremity. The speaker emphasized the conception of duodenal mobility, which he regards as not sufficiently recognized, and raised the question as to whether the movements of the duodenum are to be regarded as physiologic. Duodenal stasis, diverticula and tumors of the duodenum owe to radiology the possibility of an exact identification. Vespignani described also a rare case of encapsulated visceral fibrous peritonitis, controlled at the operative table by Fasiani. Only twenty-two cases of this disorder have been described in the literature. He dealt with the small intestine in connection with operations for gastro-enterostomy and the complications that frequently follow that operative intervention; less common are duodenojejunostomy and ileotransversostomy.

Piccinino of Naples considered radiologic research in diseases of the large intestine. He distinguished the defects of position, with a constant radiologic picture and definite clinical symptoms, including changes in position, associated with deficiencies of the ligaments. Among the defects of conformation he described the megacolon and the dolichocolon. Considerable importance attaches to radiology for the light it has thrown on intestinal motility, the mechanism of which has been clarified while the study of the physiopathology has been advanced. Among the disturbances of the canalization of the large intestine are to be considered intestinal occlusion, stenosis and invagination. The principal inflammatory processes are appendicitis, colitis and intestinal tuberculosis. Diagnostic investigation of diverticula of the colon, of fistulas and of tumors finds in radiology a potent aid.

Bellucci of Perugia spoke on lesions due to rays, considered from the biologic point of view, dealing more particularly with lesions caused by roentgen rays and by radium. Since the action of rays is always destructive whatever the dose, the term "lesion due to rays" assumes a much wider significance than is attributed to it in a medicolegal sense or from the point of view of workmen's compensation, and the subject has a wide range and depth. The speaker dealt with the biologic factors of lesions due to rays and the biophysical factors that intervene not only in diagnosis but also in therapy—and in professional roentgenologists. Speaking of the general characters of lesions due to rays, he divided them into three large groups: local, general and *à distance*. The local and the general lesions may be immediate or remote; great importance attaches also to postirradiation changes in the blood plasma and in organic exchange. The speaker recalled the influence that irradiations may have on the genesis of blood disease and of endocrine syndromes, on receptivity and the course of acute diseases and of tumors, on the fetus and on posterity. In conclusion, he dealt with the biologic mechanism of the production and the reparation of lesions due to rays.

Ratti of Milan took up the functional and organic changes due to irradiations. Considering occupational lesions, the speaker stated that the persons most exposed are the radiologists, the physicists and the sanitary personnel. The site of predilection is the skin, particularly the hands; next comes the hematopoietic system (aplastic anemia; possibly also leukemia), and finally the genital region and the body skeleton. The only person who, at the present time, cannot be completely protected is the medical radiologist himself.

The Società di radiologia elected Professor Siciliano of Florence as its new president. The city of Perugia was chosen as the meeting place of the next congress.

Meeting of Sanitarians of Civil Hospitals of Genoa

The sanitarians of the civil hospitals of Genoa met recently under the chairmanship of Professor Da Gradi. Gervino and Vaccari spoke on the modern treatment of gastroduodenal ulcers. The method that they employ is jejunal feeding with the sound, combined with treatment with atropine and pepsin. The speakers brought out the difficulties of such treatment owing to the necessity of frequent radiologic control, which restricts the use of the method in ulcerations of the lesser curvature. The results that they have secured are, however, superior to those obtained by any other form of treatment, and amount to 60 per cent of recoveries as controlled thus far.

Durante expatiated on the resection of the scalene muscles in pulmonary tuberculosis. In addition to the operative technic, the speaker described a special instrument that he employs to facilitate the rapid section of the scalene muscles, either separately or combined with the section of the phrenic nerve and the posterior thoracic nerve. He mentioned also the most recent research, accounts of which have appeared in the world literature, tending to direct surgery of the pulmonary lesions toward the suppression of inspiratory excursions controlled by the scalene muscles.

Vignolo described a rare case of bilateral osteochondritis of the hip joint in a child, aged 6, who presented also a movable

body, in the right knee joint, of the size of a lentil. Movable bodies of the joints are rare in children, and it is advisable to postpone surgical intervention, waiting to see whether the movable body increases in size and causes increased functional disturbances.

Trevisanello spoke on epidemic hiccup, describing four cases that he observed simultaneously in persons who were not living in close contact and who did not present at the time any influenzal or encephalitic symptomatology. The speaker cast doubt on the existence of a true epidemic hiccup, in the sense of an independent disease entity, as described by some modern authors, and regards such a morbid manifestation as merely a symptom.

MADRID

(From Our Regular Correspondent)

July 17, 1932.

Water Supply of Madrid

The director of water of Madrid recently lectured before the Sociedad de Higiene on the water supplied by the canals of the Lozaya Springs, which furnish Madrid with a daily average of 218 liters of water per inhabitant. Ten cities in the United States and three European cities receive a larger daily output from their water supplies (500 liters per inhabitant daily each of the ten cities in the United States and 268 liters each of the European cities). Twenty-four other large cities receive a still smaller daily output than that given by the Lozaya supply to Madrid. In this group may be placed London, Vienna and Berlin, with a daily output of 168, 161 and 118 liters, respectively, per inhabitant. In 1928 the government authorized an expenditure of 120,000,000 pesetas ($10,800,000). When the supply plant was established, eighty years ago, with Dr. Bravo Murillo as a director, 129,000,000 pesetas ($11,610,000) was spent. At that time Madrid had 200,000 inhabitants, while now it has more than a million. Improvements have been made in the water supply plants, including the enlargement of one of the canals to more than one third of its former capacity, the installation of 100 kilometers of new pipes in the suburbs of Madrid, and the construction of a new canal costing $4,500,000, which will be ready next year. The water supplying Madrid is of excellent quality. The basin of the springs is naturally formed by hard granite. The water cannot become turbid or contaminated because the basin is protected by the dams of Villar and Puentes Viejos, constructed in 1879 and in 1920, respectively. The water reaches the city pleasantly cool, more so since 1911, when a transverse canal was constructed. Both the plants and the aqueduct are well protected against contamination. The town of Buitrago, where the springs are located, is small. Nevertheless the committee in charge of the water supply of Madrid maintains a public health brigade, guards for the care of the plants and of the canals and a hospital with a capacity of eight beds. The members of the small medical center may communicate with the members of the central branch and of the laboratories of the Lozaya canals, among whom there are prominent specialists and bacteriologists, whenever necessary. The Lozaya canals furnish an abundant supply of water to several towns near Madrid. The sanitary regulations are enforced by competent officials and the water passes through a process of double chlorinization by the Wallace and Tiornan system.

Trypanosomiasis in Spanish Territories

The Madrid branch of the Association of Physicians of the Spanish Colonies recently presented before the government a report on health conditions of the Spanish territories in the coast of the Gulf of Guinea, with especial reference to the frequency of trypanosomiasis. In the city of Bata the mortality caused by trypanosomiasis, which some years ago was small, reached 12 per cent in 1930, and 42 per cent of the deaths from all diseases in 1931. The unsatisfactory conditions of health on the coast of the Gulf of Guinea cannot be considered due to economic conditions. The government of Spain is generous in matters of sanitary services for the colonies. Seventy pesetas ($6.30) for square kilometer and 11 pesetas ($0.99) for each inhabitant are allowed in Spanish colonies for public health purposes, while there is an allowance of 9.4 francs ($0.84) per square kilometer and 3.1 francs ($0.28) for each inhabitant in the French colonies Gabon and Camerun. In the report of the colonial physicians it is stated that the inhabitants of some nearby colonies have suspended migration toward Spanish Guinea because the health conditions of that region are not satisfactory.

Congress of Ophthalmology

The Sociedad Oftalmológica hispanoamericana is now holding its seventeenth congress in the Casa de Salud de Valdecilla, in Santander. Ocular microscopy is the official topic of the congress. Microscopy of the vitreous body will be the official topic for the next congress. The discovery of the so-called double slit lamp for the examination of the eye, made by Dr. Lacarrere, has enabled ophthalmologists to make important studies on pathologic conditions of the cornea. Prof. Novoa Santos believes that Dr. Lacarrere's discovery will solve certain problems offered to the ophthalmologists by intern physicians, making it possible to recognize certain disturbances of general nutrition by the presence of lipoid degeneration of the cornea. Dr. Lacarrere is the general secretary of the seventeenth congress, now in session.

Women Physicians in Spain

Dr. Carabías recently lectured on the subject of women in the medical profession. He stated that the first Spanish woman physician, Martina Castañeda, graduated in Madrid in 1882. When she graduated, all the schools closed for the day, and the students paraded, with music and banners. At present there are about 100 women physicians in Spain, some of whom are in prominent positions. Women physicians have better opportunities to practice in Spain than in some other countries. In France there are several thousand women physicians, some of whom are famous, but no woman has been given any position in the board of public health of the state, nor in a hospital as intern physician. The last congress of the International Association of Women Physicians was surprised when informed that both Drs. Soriano and García de Cosa had positions in the civil navy of Spain.

Distress Among Spanish Physicians

Recent statistics seem to show that about 10,000 physicians have no practice. The schools of medicine annually graduate about 1,000 new physicians, while the annual mortality of physicians is about 200. The profession has remained indifferent to its own interests by permitting members of subordinate professions, such as midwives, nurses, dentists, chiropodists and masseurs, to enter fields which should be reserved for physicians. These factors have brought on a condition of misery and hunger in many homes of physicians. In order to remedy this situation, if possible, a general meeting has been called, to be held at Madrid on a date to be announced later. Physicians who wish to help to remedy this critical condition in the profession are requested to send their plans to the committee on organization, in charge of Dr. Pio Brezosa Tablares, Calle Salmeron, No. 100, Barcelona, Spain.

Mental Hygiene

The Liga Española de la Higiene Mental recently held several meetings in Madrid. Mr. Azaña, president of the Council of Ministers of Madrid, said at the inaugural meeting that the government is deeply interested in mental hygiene. When the meetings were over the following petitions were sent to the

government: In order to preserve mental hygiene it is advisable to stop all noises in the cities, especially near hospitals, all the time, and near colleges and schools during classes and in the entire city during certain hours of the night. It seems advisable to prohibit the daily papers from publishing pictures depicting crimes, as well as descriptions of suicides, robberies and similar acts. The relation between alcoholism and mental diseases is evident. Alcoholism should be attacked not by means of prohibition but through scientific measures enforced by the government. Whereas modern psychiatry cares for psychiatric patients in dispensaries, hospitals and colonies, there are no colonies for psychiatric patients in Spain. The Liga asked the government to establish an asylum near Madrid, with departments for psychopaths, drug addicts and dangerous persons of all ages.

Meeting of Socialists

Several Spanish physicians of the socialistic party met recently in La Casa del Pueblo de Madrid to organize a national federation of Spanish syndicalized physicians. Dr. Verdes Montenegro was president of the meeting. The members of the congress passed resolutions of confidence in the general director of public health, who is a socialist of great political activity. The members of the congress also passed resolutions of solidarity with their Russian comrades in the defense of the proletarian revolution.

Lectures on Tuberculosis

Dr. L. Bernard, professor of phthisiology of the Faculty of Medicine of the University of Paris, recently lectured before the Escuela de Sanidad of Madrid on the progress recently made on phthisiology as applied to the antituberculous crusade. Tuberculosis is a contagious disease. Contagion, as a rule, takes place between human beings, especially through the sputum. The patients should be isolated from the rest of the healthy community. Good methods for isolation of tuberculous children are the Grancher and Bernard methods. In the crusade against tuberculosis the therapeutic knowledge recently acquired, such as the performance of ambulatory pneumothorax and the administration of B C G to the new-born, are of great importance. Ambulatory pneumothorax should be performed only in the dispensaries. The harmlessness of B C G and its preventive value seem to be proved. After the tuberculous patient has obtained complete recovery, an important problem is that related to the proper kind of work he can undertake. Frequently the patients are advised to do farm work. However, this kind of work sometimes demands too vigorous physical exercise.

Prof. A. Saenz of Uruguay, a member of the Institut Pasteur of Paris, recently gave a lecture before the Escuela Nacional de Sanidad of Madrid on the value of B C G in the prevention of tuberculosis. He is enthusiastic about the vaccine. A careful study of statistical data given to the Institut Pasteur of Paris on the results of the vaccination in forty-six countries (not including France, which has special statistics), pointed out that a total of 443,656 infants of less than 1 year of age received the vaccination. Among the general rate of infant mortality from all diseases, 7.9 per cent was among infants who had received B C G and 15.3 per cent among infants who had not received it. The results point out that B C G caused a diminution of 50 per cent in the infant mortality from tuberculosis.

Radio Lectures Given by Hospitals

The hospitals of Barcelona are going through a crisis. Last February the directors of several hospitals asked the assistance of the public and stated that if help could not be secured the number of beds would have to be reduced. The present national crisis has decreased the amount of donations to hospitals. Some money previously devoted to the general welfare services is now applied to salaries of some municipal departments. Several attempts were made to help the hospitals but failed; for instance, a football game was played, but the organizers encountered a deficit, which they wanted the hospital to cover. Now some radio lectures have been organized by the hospitals and they promise to be successful. The two most popular speakers of Cataluña have employed all their wit and ability to raise money for the hospitals. Every time a donation of more than 100 pesetas ($9) is received, the name of the donor is broadcast with great enthusiasm. This brought about a doubling of the efforts of persons to raise more than 100 pesetas. The result is that in a few months 85,000 pesos ($38,250) has been collected, which, if added to amounts obtained from other projects would bring a grand total of 500,000 pesetas ($45,000) given by the public of Barcelona to their hospitals. However, the amount is comparatively small. The amount given to the Hospital de la Santa Cruz has not even paid the coal bill. The directors of the five most important hospitals of the city of Barcelona have again addressed the public for help and insist that the present situation of the hospitals cannot continue.

VIENNA

(From Our Regular Correspondent)

July 20, 1932.

Congress of International Society for Speech Defects

The fifth Congress of the International Society for Logopedics and Phoniatrics was held recently in the Physiologic Institute at Vienna, under the chairmanship of Professor Fröschel. The attendance was unusually large, and eleven countries of Europe were represented. Professor Fröschel discussed the fundamental causes of speech disturbances and their connection with disturbances of other psychic functions. Professor Pötzl discussed aphasia in persons who speak several languages, and gave the results of his studies on the changes in the architectonic structure of the cerebrum in deafmutes. Professor Marburg spoke on the rôle of the cerebellum and the midbrain with respect to speech. Considerable interest centered in the address of Dr. Feuchtwanger of Munich and that of Frau Dr. Jelinek on the brain changes in patients with disturbances of the musical sense. The condition described as depersonalization of speech (a feeling of strangeness toward one's own speech) was studied by Dr. Hoff and by Dr. Silbermann in persons with brain injuries, while Feuchtwanger and Goldzieher discussed disturbances of writing occurring under the same conditions. Professor Merész of Budapest presented a paper on stammering, in which he brought the mental factors into relation with organic manifestations. During the general discussion that followed, the subject was further elaborated from the standpoint of hereditary research (Dr. Szondi); from the standpoint of the graphologic observations, and from the clinical standpoint (E. Mohr). A lively discussion was precipitated by the paper of Dr. Weiss on the stroboscopic examination of the vibrations of the vocal cords. Several new types of apparatus for this purpose were demonstrated by Dr. Stern of the Vienna Institut für Sprachkrankheiten; also by Drs. Stein and Rudin, who have constructed a portable stroboscope. Prof. J. Tarneaud of Paris discussed the theory and treatment of functional disturbances affecting the voice, while Dr. Van Thal of London spoke on "Lisping." Peculiar interest attached to the address of Dr. Zemen on "The Interpretation of Speech Curves," and also to that of Professor Flotau on spastic disturbances of the voice by overexertion, especially in singers. An instructive demonstration was presented by Dr. Némai of Budapest, who discussed the development of the larynx through an ascending series of mammals, from the standpoint of comparative anatomy. Director Soucek of Prague spoke on the development of speech in the school for deafmutes, while Frau Dr. Jelinek described the methods and the technic of auditory exercises in hardness of hearing. Considerable time was devoted

to papers on the aid given in various countries to persons with speech defects. Madame Dr. van Dantzig of the Netherlands, Dr. Russell of Ohio and Dr. Segrè of Turin spoke on the arrangements in their respective countries. In conclusion, Professor Fröschels discussed the treatment of disorders affecting the voice in singers. Dr. Hajek gave a series of demonstrations based on the collections in the phonographic archives of the Vienna Academy of Sciences. It was the general opinion that the transactions had been a complete success.

The Death of Rudolf Kraus

The news of the sudden death of the bacteriologist Rudolf Kraus, in Santiago, Chile, at the age of 63, awakened great sorrow in Vienna. Kraus was a genuine Viennese, and unfortunately had suffered the fate that befalls so many Viennese. He studied internal medicine under Neusser and became assistant to Professor Paltauf, the creator of experimental pathology. He acquired scientific importance through his research in the field of serology. He established the serotherapeutic institute in Vienna, where he devoted himself especially to the study of precipitins—his most significant discovery. These researches constituted one of the bases for the development of the theory of immunity. He was intimately engaged in combating epidemics, and hence was called to aid in the suppression of cholera during the Serbo-Bulgarian war. In 1912 he was invited to Buenos Aires to superintend the erection and organization in that city of the state bacteriologic institute. Ten years later, he was called to establish the institute in Brazil for the securing of snake venom. Two years later he returned to Vienna, where he hoped to be appointed head of the department of experimental pathology at the University of Vienna, since, with the death of Paltauf, he appeared to be the only scientist who had had the necessary training for the post. He was destined to suffer a keen disappointment. All sorts of intrigues prevented what would have been a most fortunate choice. The chair was left vacant, ostensibly by reason of economy, but in reality he was opposed by a certain group because he was not of "purely German" blood. Indignant at such treatment, he turned his back on Vienna and accepted a call from the government of Chile to reorganize the public health service of that country. With the death of Rudolf Kraus, Vienna's "medical school" loses one of its most eminent representatives of recent decades.

Increase in Mortality from Almost All Diseases

The statistics of the public health service furnish an instructive picture of the morbidity and mortality as they have developed in recent years under the influence of the prevailing economic conditions. It is indisputable that the figures bearing on these factors show a constant increase. If one compares the mortality figures of 1925 with those of 1930, one notes in diseases of the nervous system an increase of 340 deaths; in pneumonia, 4,000; in diabetes, more than 2,000; in heart disease, more than 6,000; in neoplasms, even 8,000. It is held that the cause for the much higher mortality from pneumonia as compared with the prewar period lies in the reduced resistance of a large portion of the population because of defective nutrition. In explanation of the disorders of the circulatory organs, in addition to defective nutrition attention is called to the psychic factor represented by the manifold worries, and to the present tendency to carry devotion to sport to the stage of exhaustion. Possibly improved diagnosis would explain the "alleged" increase of diabetes. As a parallel observation, one may take the supposed increase of cancer, which may be found to be due chiefly to the perfected means of diagnosis. At present, more patients are going to physicians, and they are seeking a physician in earlier stages of disease. In tuberculosis alone, the number of deaths has been reduced by 10 per cent, during the quinquennium, as a result of the prophylaxis effected by the social aid stations for the tuberculous and the extensive early therapeutic aid afforded by sanatoriums and hospitals.

Marriages

M. A. FLATLEY, Antigo, Wis., to Miss Honora M. Flawley of Eau Claire, in New York, July 13.

SAM PERKINS BAILEY, Brooklyn, to Miss Annie Mary Gracey of Franklin, Tenn., in June.

JAMES T. QUATTLEBAUM, Columbia, S. C., to Miss Anne Elizabeth McMaster, June 25.

CLARENCE T. RISLEY to Miss Marion Olmstead, both of Conneaut, Ohio, July 9.

ALFRED E. DODSON, Medford, Ore., to Miss Ruth V. Swanson, June 19.

ERLE LESLIE BIGGS, Starke, Fla., to Miss Ethel Melba Griffin, June 15.

HENRY J. RETTIG to Miss Margaret Stepka, both of Milwaukee, July 2.

Deaths

Nathaniel Allison ⊕ chairman of the division of orthopedic surgery of the University of Chicago School of Medicine, died at La Jolla, Calif., August 30, of heart disease. Dr. Allison was born in St. Louis in 1876. He received his M.D. degree from Harvard University in 1901. Following a term of service in the Boston Children's Hospital from 1902 to 1903, he became dean and professor of orthopedic surgery in the Washington University Medical School, St. Louis, and held this position from 1909 to 1923. During the World War he served as chief of orthopedic surgery in the American Expeditionary Forces in France and received the Distinguished Service Cross in recognition of his service. In 1923 he returned to Harvard University Medical School as professor of orthopedic surgery, which position he held until 1929, when he became head of the orthopedic department in the University of Chicago. When in Boston, Dr. Allison was also chief of orthopedic surgery in the Massachusetts General Hospital and director of the Boston School for Crippled Children and the Boston School for Occupational Therapy. In Chicago he was associated with the Gertrude Dunn Hicks and Adele McElwee Memorial hospitals and with the Home for Destitute and Crippled Children. He was president of the American Orthopedic Association in 1922 and also a member of other medical and surgical organizations. He contributed many articles on his specialty to medical literature. He was also co-author with Ghormley of "Diagnosis in Joint Disease." In the American Medical Association he served as chairman of the Section on Orthopedic Surgery from 1914 to 1915. He rendered especially valuable service as a member of the Cooperative Committee on Fractures, which arranged exhibits on this subject at most of the recent annual sessions of the American Medical Association. He cooperated also in the publication of "The Outline of the Treatment of Fractures," issued by the Association.

John Lyman Peck, Scranton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1897; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; surgeon in chief to the Hahnemann Hospital; surgeon to the Mercy Hospital, Scranton; consulting surgeon to the Wyoming Valley Homeopathic, Wilkes-Barre and the Wayne County Memorial Hospital, Honesdale; aged 62; died, July 28, of heart disease.

Leigh A. Fuller ⊕ Colonel, U. S. Army, retired, Oswego, N. Y.; University of Virginia Department of Medicine, Charlottesville, 1893; entered the Army as an assistant surgeon in 1896; veteran of the Spanish-American War; was promoted through the various grades to that of colonel in 1917; was retired in 1922 after twenty-six years' service; aged 63; died, July 28, in Fort Ontario, of acute dilatation of the heart, arteriosclerosis and myocarditis.

Noble Robert Townsend, Arkadelphia, Ark.; Hospital College of Medicine, Louisville, Ky., 1889; Medical Department of the Tulane University of Louisiana, New Orleans, 1897; member of the Arkansas Medical Society; also a minister; physician and surgeon to the Ouachita College; part owner of a hospital bearing his name; aged 66; died, June 24, of coronary thrombosis.

Alexander Stewart Monro, Vancouver, B. C., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1896; fellow of the American College of Surgeons; past president of

the Canadian Medical Association; consulting surgeon to the Vancouver General Hospital; aged 60; died, August 12, in the Saskatoon (Sask.) City Hospital, of heart disease.

Harold Adams Gale, Winchester, Mass.; Harvard University Medical School, Boston, 1901; member of the Massachusetts Medical Society and the New England Pediatric Society; on the staff of the Winchester Hospital; aged 55; died, July 21, at Laconia, N. H., of septic peritonitis following ruptured diverticulum of the sigmoid.

Ira Joslin Prouty ⊕ Keene, N. H.; Medical Department of the University of the City of New York, 1882; fellow of the American College of Surgeons; formerly member of the board of health and school board of Keene; surgeon to the Elliot Community Hospital; aged 74; died, July 31, of chronic myocarditis and interstitial nephritis.

Mark W. Peyser, Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1890; member of the Medical Society of Virginia; for many years secretary of the Richmond Academy of Medicine; on the staff of the Stuart Circle Hospital; aged 62; died, July 29, of carcinoma of the bronchus and chronic arthritis.

Robert Henry Goodier, Hannibal, Mo.; Missouri Medical College, St. Louis, 1883; past president of the Missouri State Medical Association and the Marion County Medical Society; past president of the Missouri State Board of Health; aged 71; died, July 22, in the Levering Hospital, of myocarditis and chronic interstitial nephritis.

Plynn Morton Bolton, Stillwater, N. Y.; New York Homeopathic Medical College and Flower Hospital, 1914; member of the Medical Society of the State of New York; served during the World War; aged 41; died suddenly, July 23, in the Leonard Hospital, Troy, of acute hemorrhagic nephritis.

John Philip Carroll ⊕ Woburn, Mass.; Dartmouth Medical School, Hanover, N. H., 1898; formerly member and chairman of the board of health; aged 57; on the staff of the Charles Choate Memorial Hospital, where he died, July 31, of complications, following an operation for appendicitis.

Harold Francis Miller, Worcester, Mass.; Ohio State University College of Medicine, Columbus, 1926; member of the Massachusetts Medical Society; on the staff of the Worcester Memorial Hospital; aged 30; died, July 16, in Shrewsbury, of pulmonary tuberculosis.

Walter Stewart, Memphis, Tenn.; Memphis Hospital Medical College, 1889; formerly superintendent of the Western State Hospital, Bolivar, and the Memphis General Hospital; aged 65; died, June 26, in the Baptist Memorial Hospital, of carcinoma of the colon.

John Merl Frick, Toledo, Ohio; Rush Medical College, Chicago, 1902; member of the Ohio State Medical Association and the American Proctologic Society; on the staff of St. Vincent's Hospital; aged 53; died, July 13, of a self inflicted bullet wound.

Lorraine Lambert Schwartz ⊕ Pittsburgh; Jefferson Medical College of Philadelphia, 1903; fellow of the American College of Physicians; aged 58; on the staff of the Mercy Hospital, where he died, July 25, of skull fracture sustained in a fall.

John K. Henry ⊕ Mauch Chunk, Pa.; Medico-Chirurgical College of Philadelphia, 1890; for twenty-five years director of the schools of Mauch Chunk; member of the local board of health for thirty years; aged 71; died, July 13, of pneumonia.

Eugene Holden Goldberg, Kearny, N. J.; College of Physicians and Surgeons in the City of New York, 1889; member of the Medical Society of New Jersey; formerly mayor; aged 63; died, June 13, of cerebral hemorrhage.

Milo Mason Loomis ⊕ Manilla, Iowa; Rush Medical College, Chicago, 1897; president of the Crawford County Medical Society; formerly president of the school board; aged 58; died, July 16, of injuries received in an automobile accident.

Samuel Ingram Muller, Long Island City, N. Y.; Long Island College Hospital, Brooklyn, 1914; member of the Medical Society of the State of New York; aged 40; died, July 11, of coronary thrombosis and arteriosclerosis.

John Warren Bail, Brookline, Mass.; Harvard University Medical School, Boston, 1903; member of the Massachusetts Medical Society; aged 55; died, July 16, at his summer home in Duxbury, Mass., of coronary occlusion.

Daniel M. Adams ⊕ Panama City, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912; part owner of the Panama City Hospital; aged 52; died, July 17, in a hospital at Dothan, Ala., of a bullet wound.

Eroll Samuel Hopper, Alamo, Tenn.; Memphis Hospital Medical College, 1911; member of the Tennessee State Medical Association; aged 46; died, July 2, in the Baptist Memorial Hospital, Memphis, of tumor of the brain.

Theodore B. Ford, Columbia, Miss.; Medical Department of the University of Louisiana, New Orleans, 1870; formerly member of the state legislature and state senator; aged 83; died, July 21, of chronic myocarditis.

Willis Joseph Kirkbride ⊕ Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1901; aged 53; on the staff of the Robinwood Hospital, where he died, July 20, following an operation for appendicitis.

Waldemar J. Sieminowicz, Chicago; College of Physicians and Surgeons, Baltimore, 1893; College of Physicians and Surgeons, Chicago, 1895; aged 72; died, June 13, of carcinoma of the rectum and chronic nephritis.

Philipp Henry Letourneau, Waukon, Iowa; Chicago Medical College, 1881; formerly mayor, health officer and member of the school board; aged 71; died, July 13, of carcinoma of the bladder and prostate.

William Smith Tharp, Sioux City, Iowa; Jefferson Medical College of Philadelphia, 1879; formerly professor of genito-urinary diseases at the Sioux City College of Medicine; aged 75; died, July 3, of heart disease.

Stephen Grant Olmstead, East Stanwood, Wash.; University of Michigan Medical School, Ann Arbor, 1894; member of the Washington State Medical Association; aged 65; died in July of chronic myocarditis.

Henry Harrison Atkinson ⊕ Fordyce, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; president of the Dallas County Medical Society; aged 52; died, June 6, of disease of the kidneys and heart disease.

Michelle Arnold Morin, New Egypt, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1898; aged 76; died suddenly, April 2, in the St. Francis Hospital, Trenton, of coronary thrombosis.

John S. Horner ⊕ West Pawlet, Vt.; University of Vermont College of Medicine, Burlington, 1892; health officer of Pawlet; aged 64; died, June 19, of septicemia complicated with chronic nephritis.

Francis M. Gustin, Union City, Ind.; Hahnemann Medical College and Hospital, Chicago, 1881; formerly secretary of the city board of health; aged 77; died, June 24, in the Union City Hospital.

Frederick P. Griswold ⊕ Meriden, Conn.; College of Physicians and Surgeons in the City of New York, 1876; on the staff of the Meriden Hospital; aged 82; died, June 27, of heart disease.

Mark Calvin Rabert, Phoenixville, Pa.; Medico-Chirurgical College of Philadelphia, 1915; on the staff of the Phoenixville Hospital; aged 41; died, May 15, in the Allentown (Pa.) Hospital.

William McNaul, San Miguel, Calif.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1884; aged 75; died, June 18, of diabetes.

James Branch Taylor, Oakland, Calif.; College of Physicians and Surgeons in the City of New York, 1882; aged 81; died, in July, of chronic myocarditis and bronchopneumonia.

J. Keller Johnson, Mount Sterling, Ky.; University of Louisville (Ky.) School of Medicine, 1888; aged 68; died, July 23, in a hospital at Lexington, of cerebral hemorrhage.

Samuel Iglick ⊕ Orland, Calif.; Columbus (Ohio) Medical College, 1888; aged 77; died, July 7, of pneumonia, as the result of an injury received in an automobile accident.

Leonard Hugh Ford ⊕ Russellville, Ala.; Chicago College of Medicine and Surgery, 1915; aged 47; died, July 13, in a hospital at Florence, of a fracture of the skull.

Samuel Neely Hutchison, Long Beach, Calif.; University of Arkansas School of Medicine, Little Rock, 1915; aged 39; died, May 28, of coronary arteriosclerosis.

Leroy Henry, San Fernando, Calif.; Medical College of Indiana, Indianapolis, 1893; aged 71; died, May 30, of ethmoid sinusitis with endocarditis and meningitis.

Enos E. B. Beatty ⊕ Newton, N. J.; Medical Department of the University of the City of New York, 1887; aged 70; died suddenly, July 9, of heart disease.

Frederick William Lange, Scranton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1890; aged 70; died, July 9.

Charles F. Curtis, Decatur, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1908; aged 73; died, May 2, in Brea, Calif., of chronic myocarditis.

Frederick F. Gano, Newark, Ill.; Medico-Chirurgical College of Philadelphia, 1899; aged 58; died, June 18, in Aurora, of diabetes mellitus and pyelonephritis.

Edwin Murray Mann, Kenbridge, Va.; University of Virginia Department of Medicine, Charlottesville, 1889; aged 64; died, July 2, of cerebral hemorrhage.

Albert Alexander Milliken, San Francisco; Cooper Medical College, San Francisco, 1889; aged 65; died, June 10, in Woodland, Calif., of heart disease.

Benjamin Franklin Clarke, San Jose, Calif.; Medical College of the Pacific, San Francisco, 1877; aged 78; died, June 23, of heart block and arteriosclerosis.

Charles C. Huston ⊕ Knox, Pa.; Detroit College of Medicine, 1911; aged 46; died, August 8, in the Oil City (Pa.) Hospital, of paratyphoid fever.

Leonard A. Slater, Richmond, Va.; University of Maryland School of Medicine, Baltimore, 1891; aged 63; died, May 19, of cerebral hemorrhage.

Gabriel Hardin Funk, Oklahoma City; University of Louisville (Ky.) School of Medicine, 1890; aged 64; died, May 28, of angina pectoris.

Isidor Stein, New York; University of Prague, 1888; aged 68; died, June 25, in the Mount Sinai Hospital, of sepsis and multiple lung abscesses.

Charles I. Welsh, Clyde, Kan.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1894; aged 73; died, June 23, of cerebral hemorrhage.

Theophius O. Duckworth, Salt Lake City, Utah; American Medical College, St. Louis, 1905; aged 58; died, July 10, of cerebral hemorrhage.

Ulysses G. Hoshaw, Joplin, Mo.; Hospital College of Medicine, Louisville, Ky., 1895; aged 63; died, April 13, of coronary thrombosis.

John Joseph Lyons, Troy, N. Y.; Albany Medical College, 1890; aged 70; died, July 1, of chronic myocarditis and chronic interstitial nephritis.

Henry Floyd Crandall ⊕ Oceanside, Calif.; St. Louis College of Physicians and Surgeons, 1908; aged 57; died, July 16, of angina pectoris.

Marcus Conrad Hildebrand, Colusa, Calif.; Chattanooga (Tenn.) Medical College, 1897; aged 63; died, June 10, of pernicious anemia.

Charles H. Lozar, Sheridan, Mich.; Detroit College of Medicine, 1901; aged 57; died, June 29, of tuberculosis of the lungs and intestine.

Caswell Cusick, Knoxville, Tenn.; Memphis Hospital Medical College, 1898; aged 68; died, June 6, in the Knoxville General Hospital.

Ezra J. Cobleigh, Detroit; Michigan College of Medicine and Surgery, Detroit, 1896; aged 60; died, May 30, of acute cardiac dilatation.

Thomas S. Hollenbeck, Portageville, Mo.; American Medical College, St. Louis, 1883; aged 79; died, June 11, of diabetes mellitus.

George Christiansen, Glendale, Ariz.; Northwestern University Medical School, Chicago, 1911; aged 46; died, July 13, of tuberculosis.

Cleaver Henry Brinkerhoff, Chicago; University of Illinois College of Medicine, Chicago, 1913; aged 43; died, July 13, of endocarditis.

Augustus Case, Akron, Ind.; Medical College of Ohio, Cincinnati, 1857; Civil War veteran; aged 99; died, July 12, of nephritis.

B. J. Barnette, Indianola, Miss.; Memphis (Tenn.) Hospital Medical College, 1896; aged 61; died, in April, of cirrhosis of the liver.

Alexander Gibson, Alturas, Calif.; Missouri Medical College, St. Louis, 1889; aged 64; died, June 16, of acute myocarditis.

Alfred Gifford, Lawrence, Kan.; St. Louis Medical College, 1878; aged 77; died, May 20, of cardiovascular renal disease.

William H. Roueche ⊕ Erie, Pa.; Baltimore Medical College, 1895; aged 63; died, July 5, of cerebral hemorrhage.

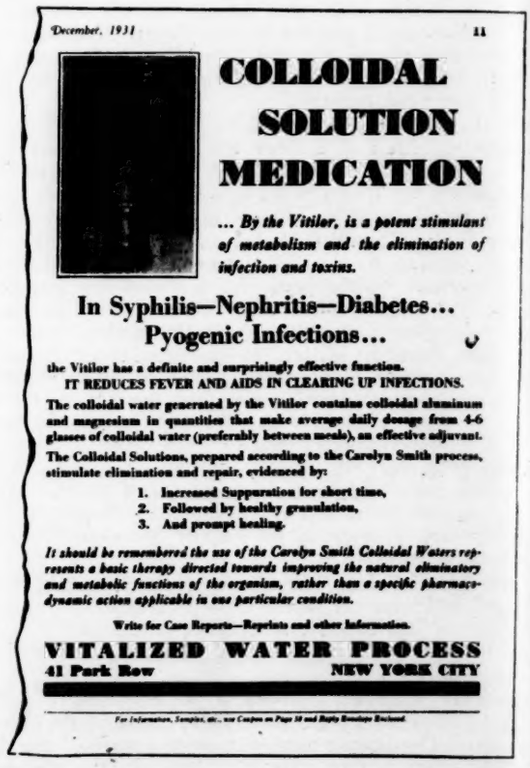
Alonzo Eagon, Detroit; Grand Rapids Medical College, 1906; aged 70; died, May 4, of angina pectoris.

Bureau of Investigation

VITALIZED WATER PROCESS COMPANY

The Post Office Authorities Stop Another Attempt to Make a Patent Medicine out of Drinking Water

Some ten years ago—in May, 1922, to be exact—the Bureau of Investigation received its first inquiry regarding the device called the "Vitilor," said to be invented by a Miss Carolyn Scofield Smith and promoted by the Vitalized Water Process Company. The Vitilor is a metallic container through which either distilled water or tap water is passed to emerge containing—alleged—colloid metal in solution. Miss Smith had a book on the subject as well as a number of free advertising leaflets. Her leaflets on "Colloids in Surgical Cases" and "Colloids in Medicine" were delightfully vague and aroused in the technically trained a strong element of suspicion for the claims made by Miss Smith.


December, 1931
11
COLLOIDAL SOLUTION MEDICATION
... By the Vitilor, is a potent stimulant of metabolism and the elimination of infection and toxins.
In Syphilis—Nephritis—Diabetes... Pyogenic Infections...
the Vitilor has a definite and surprisingly effective function.
IT REDUCES FEVER AND AIDS IN CLEARING UP INFECTIONS.
The colloidal water generated by the Vitilor contains colloidal aluminum and magnesium in quantities that make average daily dosage from 4-6 glasses of colloidal water (preferably between meals), an effective adjuvant.
The Colloidal Solutions, prepared according to the Carolyn Smith process, stimulate elimination and repair, evidenced by:
1. Increased Suppuration for short time,
2. Followed by healthy granulation,
3. And prompt healing.
It should be remembered the use of the Carolyn Smith Colloidal Waters represents a basic therapy directed towards improving the natural eliminatory and metabolic functions of the organism, rather than a specific pharmacodynamic action applicable in one particular condition.
Write for Case Reports—Reprints and other Information.
VITALIZED WATER PROCESS
41 Park Row NEW YORK CITY

Photographic facsimile (greatly reduced) of full-page advertisement appearing in *American Medicine* for December, 1931.

A six page leaflet compiled by Carolyn Scofield Smith and sent out to physicians and others stated, either directly or by implication, that the Vitilor would cure among other things tuberculosis, diabetes, ulcerated teeth, chronic nephritis, pyelitis, asthma, pneumonia, high blood pressure and "water on the knee."

One interesting piece of advertising for the Vitilor was a letter purported to have been written in 1924 by a professor of experimental engineering at a technical school in Brooklyn. The professor was enthusiastic about the Vitilor and especially about colloids in general. According to this letter, the Vitilor produced colloids which were united with oxygen. When water from the Vitilor was consumed by a normal person, the oxygen would not be detached from the colloid and nothing would happen. When, however, the blood reached the part of the body that was diseased, the oxygen would be detached from the colloid, due to the acid condition present, thus, as the letter stated, "causing the acid to break down into water plus a neutral salt, which is eliminated." The professor's letter went on to state that water from the Vitilor was at that time (1924) being used in the Sea View Hospital.

on Staten Island for tuberculosis and diabetic patients. The letter closed with the statement that "many of my students drink the water and it cures boils, pimples, infected sores, etc."

From 1922 until recently, the Bureau of Investigation has received many inquiries regarding the Vitilor and its inventor. Now come the post office authorities with a fraud order, debarring from the United States mail, the Vitalized Water Company and the Vitalized Water Process and their officers and agencies.

According to a memorandum of the solicitor, the Hon. Horace J. Donnelly, to the Postmaster General, the Vitalized Water Company and the Vitalized Water Process, are owned and operated by Miss Carolyn Smith. Miss Smith is not a physician but claims to have studied chemistry. The Vitilor was described as a tank of about two quarts' capacity, so made that water could be introduced at the bottom through which it was forced through charcoal and then passed through a small screen into and through a chamber containing fine particles of aluminum. The water was drawn out through the top and was to be drunk in doses of from one quarter of a glass to six or eight glasses daily, depending upon the seriousness of the ailments to be treated. The Vitilor sold for $45.00, the cost price, according to the memorandum, being $10.50.

The postal authorities tested one of the Vitilors through the laboratories of the Food and Drug Administration in the Department of Agriculture. The device was there set up and distilled water run through it in accordance with the directions. The amount of metallic residue that was found in the water after passing through the Vitilor was absurdly minute and there was introduced by the government evidence showing that the mineral content of ordinary tap water in various cities is largely in excess of the inconsequential amount added to water that has passed through the Vitilor. The following table shows the aluminum and calcium content of tap water in five cities as compared with the amount of these same metals that would be added by passing it through the Vitilor.

	Milligrams per liter	
	Alumina (Al_2O_3)	Calcium (Ca)
Vitilor water	1.5	29.
Baltimore tap water	4.	18.
Detroit tap water	2.	27.
Harrisburg, Pa., tap water	1.	14.
Springfield, Ill., tap water	10.	50.
Youngstown, Ohio, tap water	3.	49.

The government also presented evidence to show the various foods included in the daily diet contained more aluminum and calcium than is to be obtained by treatment of water with the Vitilor. It is interesting in this connection to note that Miss Smith's device was recommended in the treatment of cancer. The interest lies in the fact that while Miss Smith is recommending aluminum salts in the treatment of cancer, there is a group of rather vocal faddists (together with some quacks) which has, during the past few years, been advancing the thesis that aluminum cooking utensils are the cause of cancer! The solicitor's memorandum concludes with these words:

"Uncontroverted expert medical testimony in this case shows that the various diseases and ailments claimed to be benefited, cured or prevented by drinking the quantities of water passed through the 'Vitilor' as prescribed by the respondent will in no instance be benefited. When it is considered that the very metals claimed to be added by the 'Vitilor,' both in colloidal and other forms, are daily consumed in food and drink in amounts in excess of the amounts obtained through this device the absurdity of the claims of respondent are manifest.

"The evidence before me shows and I so find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises.

"I therefore recommend that a fraud order be issued against the Vitalized Water Company and Vitalized Water Process, and their officers and agents as such, at New York, New York."

The fraud order was issued July 6, 1932.

The Father of Medicine.—Hippocrates was primarily a physician, endowed with remarkable powers of observation and with an unusual store of common sense.—Major, R. H.: Classic Descriptions of Disease, Springfield, Ill., Charles C. Thomas, 1932, page 5.

Correspondence

EXTRAPANCREATIC (CELLULAR) INSULIN

To the Editor:—I would beg the privilege to differ from the conclusions of the Toronto investigators that "there is no evidence that any tissue other than pancreatic either produces or stores insulin." Your editorial on the alleged distribution of insulin (THE JOURNAL, June 25, p. 2291) calls attention to the intricacies of the most modern extraction methods. Tests for insulin are not chemical but biologic, calling for the averaging of results from a large number of mice. You have pointed out that past experiments on plant tissues were inconclusive, and the critics generally agree that this whole question should be reopened: I agree with them but do not agree with the Toronto investigators who practically close the question when they say "there is no evidence." I think that there is evidence, and plenty of it, of the physiologic action of extrapancreatic insulin, to be found in the metabolic data of Soskin, in his various experiments on depancreatized dogs (Tuttle, G. H.: *New England J. Med.* **206**:8 [Jan. 7] 1932). The evidence from extraction is at most negative evidence, whereas that from metabolic data is positive evidence of the physiologic action of some kind of insulin. One reason at least for the failure to extract tissue insulin is the following: The insulin of the pancreas as produced by the cells of the islands of Langerhans is a chemical entity capable of crystallization by the method of Abel. The tissue insulin, of which there is evidence through metabolic data, is impossible of extraction by present known methods, and hence its chemical form is not known; but one thing is practically certain, that the two insulins are not chemically identical since one is produced and activated in the originating cell, where it performs its function, whereas the pancreatic insulin is produced within the pancreas in an inactive state and does not become activated until it leaves the pancreas, which is plainly shown by the strictly scientific experiments of A. H. Clarke (*Johns Hopkins Hosp. Rep.*, 1916). Briefly summarized, these show that if the normal pancreas is perfused with Locke's solution containing physiologic amounts of dextrose, no sugar disappears from the solution. (Plenty of insulin in the pancreas, but in an inactive state.) When the heart was perfused with this solution, the same amount of dextrose disappeared as when normal blood flowed through it. In the next experiment the solution was first perfused through the pancreas (from which it absorbs inactive pancreatic insulin) and then passed through the heart. In this last test from ten to thirty times as much dextrose disappeared in the heart, showing that much inactive insulin was taken up by the solution while passing through the pancreas, and that this insulin became activated while passing through the heart, causing dextrose to disappear. In other words, the insulin that is produced in the pancreas, as well as commercial insulin, is inactive insulin capable of crystallization and of extraction; while the tissue insulin is active insulin, incapable of extraction *as yet*, or of crystallization, but clearly demonstrable by metabolic data furnished by Soskin's (*J. Nutrition* **3**:99 [Sept.] 1930) series of experiments on depancreatized dogs, examples of which I will briefly describe. By old methods such dogs survived for only a week or ten days; by modern methods they may be kept alive indefinitely. The present method of preparing an experimental dog is to remove the pancreas by operation and then to give insulin and raw pancreas until carbohydrate metabolism returns to normal. After this, insulin and pancreas are withdrawn and the dog becomes diabetic. If he is allowed to continue diabetic on a protein and fat diet only, he will live from three to six weeks in favorable cases; but if he is fed a small amount (15 Gm.) of raw pancreas each day, in addition, he will live for several months; or if he is given lecithin daily after the method of Soskin (*Biochem. J.* **23**:1385, 1929) he will

live a year or more; and it is believed that dogs can be made to live indefinitely under lecithin. No insulin is given. Now these facts seem to me to show not only that cellular (or tissue) insulin exists in the dog after depancreatization, but that it has the power of increasing to such an extent as to compensate completely for the loss of the pancreatic insulin. Many organs of the body employ this method of compensation. But since the compensation develops slowly, and the respiratory quotient in Soskin's cases does not begin to rise from 0.70 or thereabouts until from ten to fourteen days after withdrawal of insulin, one more reason for the failure of the Toronto investigators to secure cellular insulin is apparent, as they killed their dogs after only five days; and since only small quantities of cellular insulin are necessary while the powerful sugar oxidizing action of pancreatic insulin is in operation, only small amounts are normally present in the cells, but on removal of the pancreas this amount increases slowly but effectively until it can be shown from the data of Soskin's tables that about 60 per cent of the carbohydrates of the food still continue to be metabolized after the removal of the pancreas and its insulin. At present there is no known way by which sugar can be oxidized and glycogen formed for the continued action of the heart, respiratory and other muscles for a period of a year or more, except by our present known system of carbohydrate metabolism, of which insulin in some form is an essential part; so that until some new system of carbohydrate metabolism not requiring the assistance of insulin, which will furnish vital energy to these dogs and keep them alive for a year or more, is clearly demonstrated, I claim that the existence of other insulin than the pancreatic in the body cannot be denied, even though present methods of extraction fail to show it. More than thirty years elapsed after Minkowski's discovery before Banting finally was successful in extracting pancreatic insulin.

GEORGE H. TUTTLE, M.D., South Acton, Mass.

IRRATIONAL MIXTURES FOR SPINAL ANESTHESIA AND PEPTIC ULCER

To the Editor:—Protest should be entered against the apparently commercialized exploitation of the various unscientific and irrational mixtures proposed by George B. Pitkin, M.D., of Bergenfield, N. J. A few courageous workers were bold enough to call attention to the irrational mixture containing procaine, starch and strychnine proposed for "controlled spinal anesthesia" and exploited under the trademarked name of "Spinocaine" by the H. A. Metz Laboratories, Inc.

Recently Dr. Pitkin proposed another irrational mixture of protein, lipoids and emetine, for intravenous injection in the treatment of peptic ulcer. Dr. Pitkin's report on this mixture was grossly uncritical, the exact composition of the mixture was not stated although meticulous directions for its administration were given, and it is obvious that whatever beneficial results were claimed in the report were due to the admitted use of what was essentially a Sippy diet along with this extraordinary intravenous medication. The H. A. Metz Laboratories, Inc., have now the temerity to exploit this irrational and dangerous mixture under the trademarked name of "Synodal (brand of emetabol)."

Ordinarily such a matter as this would merit on the part of scientific medicine only the silence with which "Spinocaine" was received. The inclusion of strychnine in a material designed for subarachnoid injection is open to serious objection on the grounds of possible danger unless the strychnine is present in homeopathic doses, when its inclusion in the mixture can only suggest an excuse for a proprietary interest. The inclusion of emetine in a preparation proposed for the intravenous treatment of such a condition as peptic ulcer is open also to serious objection on the grounds of possible danger unless the emetine is present only in homeopathic doses, when its inclusion in the mixture would also suggest merely an excuse for trademark or patent purposes. Emetine is well recognized as a powerfully toxic alkaloid very slowly excreted from the body, apparently cumulative in action, and particularly dangerous for cardiac muscle. It would seem that a word of caution to physicians generally who may be led astray by the extraordinary exploitation of the work of Dr. Pitkin would be in order at this time, if only to inhibit the extension of his activities into still more dangerous fields.

CHAUNCEY D. LEAKE, PH.D., San Francisco.
Professor of Pharmacology, University of California Medical School.

TULAREMIA AND PARINAUD'S DISEASE

To the Editor:—Tularemia in Sweden is the subject of an editorial comment in THE JOURNAL, August 13, page 567, the last sentence of which I would like to question; i. e., "He states that many cases which had been diagnosed Parinaud's disease were later proved to be cases of 'conjunctivitis tularensis.'"

My objection relates to the use of the word "proved," which should have been "assumed," especially since Granström does not go so far as to say that it is proved.

I have given considerable attention to testing the serums of cases of Parinaud's disease, especially from the New York clinics, and I have never found one that agglutinated Bacterium tularense.

EDWARD FRANCIS, M.D.,
National Institute of Health,
Washington, D. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OVARIAN EXTRACT IN HEMOPHILIA

To the Editor:—In De Lee's "Principles and Practice of Obstetrics," third edition, page 11, line 10, is the following statement: "Ovarian extract reduces the coagulability of the blood and reduces blood pressure." In THE JOURNAL, April 23, Foord and Dysart report the treatment of a case of hemophilia by ovarian extract. The statements seem contradictory. Please explain.

M.D., California.

ANSWER.—The third edition of De Lee's "Principles and Practice of Obstetrics" was published in 1921. This was before the work of Allen, Doisy, Pratt, Zodek and others on the female sex hormone and the sex hormone of the anterior pituitary. In the fourth edition the sentence quoted is omitted, although the paragraph remains practically unchanged.

The rationale for the treatment of hemophilia by the use of ovarian extract is based on the sex linked transmission of the disease. Hemophilia occurs only in males, while it is transmitted through the female. Although the female transmits the disease to her sons, she shows no manifestation of the disease. If the female can transmit the disease she must potentially have the disease and there must be something in the female mechanism that masks its presence. The greatest difference between males and females is the sex organs, and the ovary is the most important of the female sex organs. Whole ovarian preparations have given encouraging results in the treatment of hemophilia.

When theelin, lutein and several preparations of whole ovary are added to normal blood in a test tube, the clotting time of the blood is not materially changed. When these substances are added to hemophilic blood in a test tube, the clotting time of the blood is decreased. These substances do not reduce the coagulation time of hemophilic blood to normal but do decrease it to from one half to one fourth of the time of the control. The action here seems to be on the blood platelets; by decreasing the resistance of the platelets, the clotting of hemophilic blood is hastened.

In the sixth edition of Dr. Williams' book on Obstetrics, published in 1931, the following statement is made: "Menstrual blood contains fewer red cells and more lymphocytes than the circulating blood and according to Schickele, and Stickel and Zondek, the absence of coagulation is due to substance formed

in the uterine tissue, as the fluid expressed from the uterus under pressure inhibits coagulation when added to normal blood."

The work on sex hormones is young and the part they play in the entire body mechanism is far from understood.

SYPHILIS IN PREGNANCY

To the Editor:—In March, a young married woman, aged 21, came to my office complaining of pain on the left side, simulating pleurisy. Examination disclosed the presence of mucous patches in the throat and on the vaginal mucous membrane. The patient was two months pregnant. The Wassermann reaction was four plus, which was confirmed by a subsequent blood test. After taking three injections of 0.2 Gm. of water soluble bismuth and two injections of 0.45 Gm. each of neoarsphenamine, the patient refused further treatment. She has returned at the present time and the blood Wassermann reaction now is negative. The pregnancy has continued without any untoward events. In the meantime, there has developed a systolic murmur over the apex, loud and blowing, but no apparent enlargement of the heart. The blood pressure is 102 systolic and 40 diastolic. How do you account for the negative Wassermann reaction in view of such a small amount of treatment, and how should treatment be directed from this period on? Please omit name.

M.D., Ohio.

ANSWER.—The pregnant state may have something to do with the change to a negative Wassermann reaction after the small amount of treatment. The chemical and physical changes that take place in the blood of pregnant women may influence the Wassermann reaction and for this reason some obstetricians do not believe that the Wassermann reaction is as reliable in gestation as in the nonpregnant state. However, most syphilologists place as much reliance on the test in pregnancy as at other times. Another possible explanation for the rapid change to a negative test is that syphilis may affect women to a milder degree than men.

In spite of the negative Wassermann reaction, the patient should be treated intensively not alone for her own sake but for the benefit of the unborn child as well. Syphilis is transmitted from the mother to the fetus through the placenta. This usually takes place after the fourth or fifth month of gestation, and unless treatment is instituted at this time and continued throughout gestation, the child may be born afflicted with syphilis. The more thorough the treatment, the greater the chances for a living and healthy child. After delivery, even if the child is apparently healthy, Wassermann tests should be repeatedly taken on both mother and child for many months. A roentgenogram of the baby's long bones may be of assistance if syphilis is present. If the blood tests or the roentgenograms are positive, further treatment is, of course, to be given to both mother and child.

The systolic murmur perhaps has no especial significance, because such murmurs are common during pregnancy. However, the heart should be reexamined from time to time and it is important to check up on the patient's blood count. If anemia is present, this should be treated by means of diet, liver extract and iron and arsenic preparations.

NITROHYDROCHLORIC ACID IN HAY FEVER

To the Editor:—Beckman, in his "Treatment in General Practice," advocates the use of 10 minims of aqua regia, or concentrated nitrohydrochloric acid, to be taken by mouth, well diluted with water, four times a day, in allergic states, especially hay fever. What is the rationale of this treatment? If, as Beckman claims, the allergic individual "is at all times in a state of relative alkalosis," is aqua regia the best substance to counteract it? What are the dangers? Kindly omit name.

M.D., Mineola, Long Island, N. Y.

ANSWER.—About a year and a half ago, Beckman offered the suggestion (THE JOURNAL, Nov. 22, 1930) that there may be an intimate relationship between acid-base balance and the allergic state, but he has subsequently on several occasions refused to discuss further the matter either in addresses or in print, because of his stated belief that much harm can come of the reiteration of hypotheses unsubstantiated by experimental studies. It is therefore not strictly correct to say that he "claims" that the allergic individual is at all times in a state of relative alkalosis, but only that he has drawn the attention of the profession to the fact that this point of view merits investigation; with this position many students of the matter are heartily in agreement. On purely empirical grounds, however, the nitrohydrochloric acid treatment of hay fever, as revived by Beckman, continues to be advocated by him; its rationale is still unexplained, the sole warrant for its use seeming to be the success obtained in a certain proportion of cases. It is not thought that the remedy, if used in the manner advocated, is in any wise dangerous, as it has been used for other purposes, and in variable dosage, by several generations of physicians.

TREATMENT OF UNDULANT FEVER

To the Editor:—My brother has had Malta fever for the past year. At first he was bedfast but last fall I started giving him Malta fever vaccine, made by the National Drug Company. This keeps his fever down and he is up and able to work as long as he takes a cubic centimeter of the vaccine, about every three days. As soon as he stops the vaccine his temperature begins to rise. Do you think he will wear out the disease as long as he is not permitted to have fever? Some seem to think that he will have the disease forever unless his fever is allowed to take its natural course. He is in fine condition. His weight is 196 pounds (89 Kg.), which is normal. He is quite strong but tires easily. He was given some severe reactions last fall but these did not change the course of the disease any. He has had neoarsphenamine and mercurochrome-220 soluble intravenously. Perhaps it would be interesting to know that he can take 50 grains (3.25 Gm.) of quinine a day and not even know it, as far as tolerance is concerned. Also is there anything else I can do for him? His age is 27.

C. DRYDEN BAIRD, M.D., Eureka, Kan.

ANSWER.—Recovery is achieved gradually in the vast majority of cases of undulant fever. As the patient in question is young and apparently in good physical condition, it is believed that the outlook is favorable for recovery. A few cases have continued over a period of years. In such cases it is well to search thoroughly, by physical examination, for evidence of localized infections, and, if found, surgical procedures may be invoked. Brucella infection has been found in the gallbladder and in ovarian lesions and it probably may localize in various lymph nodes, particularly the retroperitoneal glands. Rest in bed during the febrile period and for a reasonable time after the temperature becomes normal offers greater hope of complete recovery at an earlier date than other management.

PARKINSON SYNDROME AFTER ENCEPHALITIS

To the Editor:—Please outline the latest treatment for Parkinson syndrome (involving left hand and forearm only), vertical nystagmus and mental depression, all following epidemic encephalitis six years ago. What is the prognosis in a woman, aged 26? Has hyoscyamus been proved to be of value? Please omit name and address.

M.D., New York.

ANSWER.—The outlook for recovery in such a case is extremely poor, but the condition may become stationary and not shorten life materially. The most useful drugs are scopolamine hydrobromide, stramonium and atropine, but in a given case one cannot tell which drug will do the best without giving each a trial of some weeks.

TREATMENT OF AMEBIASIS AND SYPHILIS

To the Editor:—A woman, aged 62, is a chronic carrier of Amoeba histolytica. One son, aged 28 years, has amebic colitis. Both show Amoeba histolytica on their stool examination and have for years. A second son, aged 38 years, has attacks of acute abdominal cramps with stools containing mucus and blood, but his stools show no Amoeba histolytica on repeated microscopic examinations. He acquired active syphilis eleven weeks before seeking medical advice. At this time he presented florid secondaries with a four plus Wassermann and a positive Kahn reaction. Four injections of 0.9 Gm. of neoarsphenamine produced an exfoliative dermatitis. Intravenous injections of 1 per cent mercuric cyanide or mercuric oxycyanide solution produce eructations of gas and abdominal cramps, with passage of mucus and blood in stools which show no amebas. Please advise as to treatment. Please omit name.

M.D., California.

ANSWER.—The woman, aged 62, and the son, aged 28, might well be given chiniofon-N. N. R. (see New and Nonofficial Remedies, 1932, p. 125) or carbarsone (THE JOURNAL, Jan. 16, 1932, p. 230) in the recommended dosage of 0.25 Gm. in gelatin capsules twice daily after meals for ten days, in a total dosage of 5 Gm. The latter drug is in the experimental stage. Preceding this treatment, urinalysis and a phenolsulphonphthalein test should be done to exclude liver or kidney conditions which would make the use of arsenic undesirable. After a free interval of ten days to allow for excretion, the treatment could be repeated if cysts reappear.

The second son, aged 38, presumably has also an amebic infection, although the entire colitis may be syphilitic. Careful examination of fresh stools, both for cysts and for trophozoites, should be combined with sigmoidoscopic examination and search for amebas in deep scrapings. A systematic review of the causes of dysentery ought to decide the etiologic diagnosis.

It is not stated whether or not the colitis and dysentery preceded the syphilitic infection. Certainly arsenicals must be avoided in earlier treatment. The phenolsulphonphthalein test and urinalysis should be watched repeatedly. If amebas are present, emetin hydrochloride should be given, 0.03 Gm., hypodermically, one dose daily for ten days, unless contraindicated by serious fall in blood pressure or increase of dysentery. At the same time, one daily retention enema of 200 cc. of 1 per

cent chiniofon-N. N. R. should be given. The direct treatment of the syphilis might be continued cautiously with iodobismitol (ampules 2 cc.) Squibb, one-half ampule per dose with two free days between for two doses, and then a full ampule on each third day to a full course of ten injections (Hanzlik, P. J.; Mehrtens, H. G.; Gurchot, Charles, and Johnson, C. C.: Iodobismitol, THE JOURNAL, February 13, p. 537). Further treatment would have to be planned in the light of the clinical course.

PAIN AFTER INTERCOURSE

To the Editor:—A married woman, aged 44, height 5 feet 4 inches (162 cm.), weight 168 pounds (76 Kg.), always healthy and well except for painful menstruations, has been treated by having the cervix dilated, but without relief. She was married in 1917 and in 1920 was delivered of a normal child by high forceps extraction. She sustained a third degree tear, which was repaired, and then mild sepsis developed, with good recovery. Thereafter she began to have attacks of pain simulating appendicitis and was operated on in 1924. A suppurating appendix was removed; there was pus in the fimbria or the right tube, which was drained; several small cysts were removed from the right ovary and a trachelorrhaphy and perineorrhaphy was done. Recovery was uneventful and health has been excellent since, except for constipation. The menstruations have been regular, only moderately painful and normal in color. She has no vaginal discharge. The entire physical examination shows her to be an apparently sound, normal woman. However, she has had one symptom ever since the operation that has refused to respond to any kind of treatment. Immediately after sexual intercourse she has a severe, deep pelvic pain on the right side, of an intense aching character, lasting from twenty to thirty minutes, and slightly relieved by pressure and heat. Her libido is normal, and she has no aversion to the sexual act and has a normal orgasm. She has no pain unless she experiences the orgasm. The act itself causes her no distress. Can you advise me of anything I can do in this case? Both she and her husband are anxious for her to be relieved. Please do not publish name.

M.D., Iowa.

ANSWER.—It is almost certain that the anatomic changes brought about by the operation are responsible for the pain experienced by the patient. However, it is not easy to explain the mechanism by which the pain is produced unless there are large palpable and visible scars in the vault of the vagina or unless the vaginal vault is markedly constricted. Since the discomfort is present only when the woman experiences an orgasm, the sudden disappearance of intense vascular congestion most likely plays a part. Perhaps one or more sensory nerve ends were included in some of the sutures at the time of operation and these are affected by the enormous engorgement of blood that occurs in the surrounding tissue during intercourse and the sharp withdrawal of blood after an orgasm. Treatment should be conservative and should consist of repeated gentle dilation of the vagina, especially the upper part, with glass or other dilators.

PREECLAMPTIC TOXEMIA

To the Editor:—A nullipara seven months pregnant, in good physical condition and everything normal, within ten days of examination returned with epigastric pain, failing sight in both eyes and a blood pressure of 170/100, which had previously been 124/75 constantly. I sent the patient home to bed on a nonnitrogenous diet. Within twenty-four hours the blood pressure rose to 220/120 and the patient complained of an excruciating generalized headache. She was taken to the hospital immediately and placed on a strict Stroganoff regimen. During the first twelve hours the patient rallied. The blood pressure dropped to 175/100 and then began to rise. Venesection was performed, 750 cc. of blood being drawn without avail. The blood pressure rose to 230/125 and the head was "bursting." The epigastric pain was not complained of. At this time a classic cesarean section was performed, the child being a normal, three-pound girl, who died after fourteen hours. The mother progressed nicely. The headache left in about twelve hours but was considerably alleviated shortly after the patient awoke from her ethylene anesthetic. After six weeks the blood pressure has gradually dropped to 135/100 and the eyesight in that time has returned, completely at times, but for the most part it is not normal as yet, though the patient can read ordinary print for short periods. An ophthalmologist has been following the eyes from the start of the trouble and he thought the eye trouble was due to retinal hemorrhages. At this time he thinks that the sight will return almost if not completely. Kindly give me an opinion on this case. Is the blood pressure usually this slow in returning to normal or will it return completely? What should be the interpretation of the diastolic pressure in this case or one like it? The fluid intake and output was in good proportion throughout this trouble even at its peak, although the urine was extremely turbid with albumin with the heat test. There were no casts. Would a kidney function test have been of any avail or help here? Please omit name.

M.D., Illinois.

ANSWER.—This was a case of acute preeclamptic toxemia and the treatment carried out was correct, except in one essential. Local anesthesia should have been used for the cesarean section rather than ethylene, because it has been shown that all inhalation anesthetics may be injurious to women who have any of the toxemias of pregnancy. The ophthalmologist is correct in his prognosis because the eyesight is nearly always restored to normal after a few weeks or months. It is impossible to predict whether and when the blood pressure will return to normal even in the cases in which there is absolutely no clinical or laboratory evidence of permanent injury to the kidneys. The diastolic pressure is of great importance. Judging from the clinical course in this case there is at least a 60 per cent chance that both the systolic and the diastolic pressure will return to normal in due time. It frequently happens that normal women have a mild hypertension and even a mild albuminuria six weeks after delivery. On the other hand, occasionally women with nephritis have a normal blood pressure and urine at this time. Renal function tests performed during pregnancy or the early puerperium are not a reliable guide as to whether or not the patient has definite nephritis and will have permanent renal injury. Unless there is outspoken evidence of a true nephritis it is best to defer the final diagnosis until four months after delivery, although the clinical diagnosis made at the time a patient is discharged from the hospital is usually correct. Peckham and Stout (*Bull. Johns Hopkins Hosp.* **49**:225 [Oct.] 1931) examined a large series of women who had toxemia, excluding eclampsia and excessive vomiting, and they found that 40 per cent had a definite chronic nephritis from four months to four years after delivery.

DANGERS OF DUSTS IN RAYON PLANTS

To the Editor:—A manufacturing plant deals with a process during which the atmosphere of the work room is filled with a fine lint known as floc, made up of ground cotton and rayon. This floc is often composed of ground material that has been dyed. Outside of the hazard one would expect from inhalation of atmosphere permeated by cotton fibers, what industrial hazard could be expected in addition, owing to the fact that these fibers have been dyed? Is there danger of lead, arsenic or aniline intoxication following the inhalation of this floc, assuming, of course, that the dyes contain these chemicals?

A. D. LAZENBY, M.D., Baltimore.

ANSWER.—Vegetable dusts taken into the lungs are essentially harmless, except as they may lead to allergic states.

The old term "bysinosis," descriptive of a pneumonoconiotic state due to cotton dusts, is without practical importance. No dusts long entering the respiratory tract are wholly innocuous, but if the hazards from silica dust are placed at 100, those from cotton are not more than 5.

Dust from unmodified rayon is not at this time regarded as harmful. Certain artificial silks may now be weighted with lead or other toxic agents. If so, hazards may arise.

This query assumes that lead, arsenic and aniline are contained in the dyes coloring the dust particles. Accepting this, actuality of hazards will depend solely on the quantity of these agents reaching the lungs. Less than a milligram, daily reaching the lungs, of any one of the three, is capable of inducing harm. The daily intake of a milligram of a combination of the three may bring about a "mixed intoxication." However, it may be observed that many finished aniline dyes are harmless; that the quantity of arsenic or lead may be below the threshold of harm.

It may prove advantageous to determine the quantity of dust, by weight, in a given volume of air, and near the same time determine the quantity of lead and arsenic in a representative sample of collected dust.

AMEBIASIS CUTIS

To the Editor:—I would appreciate a discussion of the accepted treatment and the precautions in preparing the patient for treatment in a case of amebiasis cutis. If emetine is suggested, please state who prepares ampules for intravenous medication, and state precautions and dosage. Some time ago an article appeared in THE JOURNAL stating that extirpation of the diseased areas was the best and most positive procedure. Will you please give your opinion? Please omit name.

M.D., California.

ANSWER.—Amebiasis cutis, an ulceration of the skin due to Endamoeba histolytica, was first described by Engman and Heithaus (*J. Cutan. Dis.* **37**:715 [Nov.] 1919). The diagnosis must be confirmed by finding motile amebas in fresh preparations from lesions of the skin or by fixed smears and sections of tissue. The ulceration usually involves the skin and deeper tissues of the abdominal wall and is characterized by rapid spread, an irregular border, a dusky red advancing halo beyond the margin of the ulcer, pain and extreme tenderness on pressure, and indolent granulation tissue forming the floor of the ulcer. Two cases were recently reported by Engman and Meleney (*Arch. Dermat. & Syph.* **24**:1 [July] 1931) in which

the ulcerations developed following a resection of the colon and after drainage of an amebic abscess of the liver, both of which were fatal.

Emetine hydrochloride is the accepted treatment, either subcutaneously or intravenously in daily doses of from one-third to 1 grain (0.02 to 0.065 Gm.) but should not be given for more than eight days on account of the danger of cumulative action. Serious toxic reactions have been reported, such as vomiting, diarrhea, abdominal pain, peripheral neuritis, acute nephritis, hemoptysis, collapse and death. Most of the manufacturers prepare ampules for intravenous injection.

Extirpation, preferably with the electrocautery, might be undertaken in the early stage of the ulceration to prevent its spread.

NAMES OF BARBITAL COMPOUNDS

To the Editor:—In THE JOURNAL, June 4, on page 1994, ten or twelve lines from the top, occur the words "pentobarbital, amytal, phenobarbital, pernocton and sodium barbital." I cannot find an accurate definition in my books of these term, nor does the druggist know them. I should like to know their trade names and synonyms lest I confuse them in prescribing. M.D., Palmyra, Mo.

ANSWER.—New and Nonofficial Remedies, issued by the Council on Pharmacy and Chemistry, contains descriptions of Pentobarbital-Sodium (pentobarbital is not marketed as such, only as the sodium salt), Amytal, Phenobarbital and Barbital Sodium. Phenobarbital is official in the U. S. Pharmacopeia. Sodium Barbital is a synonym for Barbital Soluble U. S. P. It is strange that a pharmacist would not keep in his possession the latest Pharmacopeia in order to be able to recognize official preparations. New and Nonofficial Remedies would be serviceable to both the pharmacist and the correspondent.

Pernocton is stated to be a 10 per cent solution of the sodium salt of the secondary butyl-beta-bromallyl barbituric acid. The Council on Pharmacy and Chemistry has declared Pernocton not acceptable for New and Nonofficial Remedies for lack of critical evidence that routine intravenous injection of potent narcotics is desirable or safe (THE JOURNAL, Oct. 3, 1931, p. 1001).

A list of the better known barbital derivatives and the trade names of some was given in one of the series of articles on the "Indispensable Use of Narcotics" (Chemistry of Barbital and Its Derivatives, THE JOURNAL, May 30, 1931, p. 1869).

ASTRINGENT EFFECTS ON MUCOUS MEMBRANES

To the Editor:—Kindly advise me what, if any, other drug has the same action on mucous membrane as solutions of silver nitrate. I mean its discoloration of skin and fabric, and its bad effect on the plating of instruments. Will a solution of zinc chloride produce the same results? If not, can you suggest some other drug that will? Please omit name. M.D., Illinois.

ANSWER.—The action on mucous membrane of silver nitrate solutions is dependent chiefly on the astringent qualities of these solutions. While there is some antiseptic quality, this may in a large part be considered negligible. In view of the disagreeable qualities of silver nitrate, other astringents may be used. Zinc chloride is among them. So, too, are solutions of antipyrine from 0.5 to 1 per cent strength. Copper sulphate may also be used topically in strengths of from 1 to 2 per cent. For irrigation, as in the nose, strengths of 1:2,000 to 1:3,000 are better borne.

DOSAGE OF SCARLET FEVER TOXIN FOR IMMUNIZATION

To the Editor:—Immunization of adults against scarlet fever is successful when 500, 2,000, 8,000, 25,000 and 80,000 skin test doses of scarlet fever toxin at weekly intervals are given to known Dick positive persons. Will you please tell me the corresponding dosages for children of 2, 4 and 6 years of age? Please omit name. M.D., Chicago.

ANSWER.—The dosage of scarlet fever toxin employed for immunizing children 2, 4 and 6 years of age is the same as that employed for immunizing adults.

TREATMENT OF BUBO

To the Editor:—Allow me to ask what is the recognized treatment for unilateral bubo after suppuration has taken place. Please omit name. M.D., California.

ANSWER.—The recognized treatment for unilateral bubo after suppuration has taken place is incision and drainage.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 3. Acting Sec., Dr. Jos. M. Greer, Professional Bldg., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Sept. 21. *Regular.* Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 4. Sec., Dr. William Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 8. Prerequisite to license examination. Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

IDAHO: Boise, Oct. 4. Dir., Bureau of License, Mr. F. L. Cruikshank, Boise.

ILLINOIS: Chicago, Oct. 18-20. Supt. of Registration, Mr. Paul B. Johnson, Springfield.

MICHIGAN: Lansing, Oct. 11-13. Sec., Dr. Nelson McLaughlin, 1010 Maccabee Bldg., Detroit.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, Oct. 18-20. Sec., Dr. E. J. Engberg, 524 Lowry Medical Arts Bldg., St. Paul.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Block, Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 4-5. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 State Education Bldg., Albany.

TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. Alfred B. DeLoach, Medical Arts Bldg., Memphis.

WYOMING: Cheyenne, Oct. 3. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Nebraska June Report

Mrs. Clark Perkins, director, Bureau of Examining Boards, Nebraska Department of Public Welfare, reports the written examination held in Omaha, June 9-10, 1932. The examination covered 10 subjects and included 92 questions. Fifty-four candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Creighton University School of Medicine	(1930) (1931) 79, 85.1, 85.7, (1932) 79.9, 82.3, 83.7, 83.8, 84.1, 84.3, 85, 85.9, 87.3, 87.5, 88.4	(1930)	81.9,
University of Nebraska College of Med	(1928) 80.8, (1929) (1931) 80, 85.8, (1932) 79.9, 80.5, 81.4, 81.7, 81.9, 82.3, 82.4, 82.5, 82.5, 82.5, 82.8, 82.8, 83.2, 83.2, 83.8, 84.1, 84.3, 84.7, 84.7, 85, 85.1, 85.2, 85.9, 86, 86, 86, 86.1, 86.1, 86.1, 86.4, 87.9, 87.9, 88.6, 88.8, 93.4		86.2,

Mrs. Perkins also reports 5 physicians licensed by reciprocity with other states from Feb. 10 to June 20, 1932. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine		(1929)	Iowa
University of Michigan Medical School		(1928)	Michigan
St. Louis University School of Medicine		(1917)	Missouri,
	(1926) North Dakota		
Columbia University College of Phys. and Surgs		(1925)	Minnesota

Maine July Report

Dr. Adam P. Leighton, Jr., secretary, Maine Board of Registration of Medicine, reports the written examination held in Augusta, July 5-6, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, all of whom passed. Six physicians were licensed by reciprocity with other states and one physician was licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Boston University School of Medicine		(1932)	82.7, 82.7, 88.5
Tufts College Medical School		(1931)	82.4, 85.3, 85.5, 87.9
Columbia University College of Phys. and Surgs		(1904)	83.1
Jefferson Medical College of Philadelphia		(1932)	87.8
Laval University Faculty of Medicine		(1932)	83.5

McGill University Faculty of Medicine....(1931) 82.4, (1932) 84.2
University of Montreal Faculty of Medicine.....(1932) 78.2
University of Jena Faculty of Medicine, Germany.....(1928) 80.9

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1929)	Dist. Colum.
Rush Medical College		(1930)	Wisconsin
Tufts College Medical School		(1917)	Colorado
University of Pennsylvania School of Medicine		(1925)	Penna.
University of Vermont College of Medicine		(1931)	Vermont
University of Virginia Department of Medicine		(1930)	Virginia

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School		(1930)	N. B. M. Ex.

Book Notices

The Wisdom of the Body. By Walter B. Cannon, M.D., Sc.D., LL.D., George Higginson Professor of Physiology, Harvard Medical School. Cloth. Price, $3.50. Pp. 312, with 41 illustrations. New York: W. W. Norton & Company, Inc., 1932.

Dr. Cannon's views on homeostasis have been repeatedly considered in the editorial columns of THE JOURNAL. There are within the human body numerous stabilizing devices tending to maintain and to restore normality. There is an automatic mechanism for maintaining a constant supply of water, salt, sugar, proteins and fat. There are, moreover, factors of safety and of defense, as well as mechanisms for repair. Most of the chapters of Dr. Cannon's book concern these mechanisms as they are involved in relationship to specific substances. His concluding chapter indicates similar forces in biology and in social life. The living human organism suggests that stability is of prime importance. Thus it teaches a lesson to the social organism. The volume represents a sound and philosophical summary of human physiology.

Entstehung, Erkennung und Behandlung innerer Krankheiten. Band I: Die Entstehung innerer Krankheiten: Pathologische Physiologie. Von Dr. Ludolf Krehl. Fourteenth edition. Paper. Price, 39.60 marks. Pp. 716. Berlin: F. C. W. Vogel, 1932.

The previous edition of Krehl's volume on clinical pathology was published two years ago as the center piece of a treatise on principles for the practice of internal medicine. Since then the second part has been published. Although the finished textbook that has been promised by the author has not yet become available, a new edition of its first portion has been necessary to meet the steady demand for this standard book. However, physicians have been accustomed for years to new editions of this clinical pathology. The habit became well rooted probably before the ultimate destiny of the volume as one segment of a larger work was foreseen by the author. And now its new title is also becoming familiar. In this new, thorough and conscientious revision the long experience of Professor Krehl in such tasks is conspicuous. There are no radical changes anywhere; in fact, they are not numerous, and are spread out quite evenly in the different chapters. As usual, they consist of brief conservative references to and comments on recent investigations and modified opinions.

An Introduction to Dermatology. By Richard L. Sutton, M.D., Sc.D., LL.D., Professor of Diseases of the Skin, University of Kansas School of Medicine, and Richard L. Sutton, Jr., A.M., M.D., Visiting Dermatologist to the Kansas City General Hospital. Cloth. Price, $5. Pp. 565, with 183 illustrations. St. Louis: C. V. Mosby Company, 1932.

This is virtually a condensed form of the eighth edition of Sutton's "Diseases of the Skin." Intended primarily for students, it should well serve that purpose. It is rich in good illustrations, is well indexed, and is concise and clear. The format is excellent; to each of the conditions more rarely encountered, the authors devote a short paragraph. The disorders of common occurrence are more fully and adequately considered. The treatment recommended is rational and the prescriptions are simple and of a kind that can be readily dispensed. The first part of the book is devoted to the principles of dermatology, anatomy, physiology, pathology, etiology and treatment, and includes also a topographic classification which should be of service to the student. Newer subjects, such as allergy and bacteriophage therapy, are included. The book is a sound, conservative work that should serve as a useful introduction to dermatology.

Pathologie und Therapie der Erkrankungen des Kehlkopfes, der Luftröhre und der Bronchien. Von Prof. Dr. M. Hajek, Vorstand der Universitätsklinik für Kehlkopf-, Nasen- und Ohrenkrankheiten in Wien. Abteilung II. Paper. Price, 60 marks. Pp. 193-432, with 123 illustrations. Leipzig: Curt Kabitzsch, 1932.

The second section of this work, the first portion of which was reviewed recently, continues in the middle of a sentence of the previous section in the chapter on the differential diagnosis of diphtheria. The condition of the pharynx, larynx and trachea in other acute diseases, such as typhoid, influenza and glanders, is described in detail. An interesting chapter is devoted to diseases of the larynx and treachea with their various dermatoses. This is followed by a complete section on tuberculosis of the upper air passages. Then follow topics such as syphilis, leprosy and rhinoscleroma. The section on the injury of the larynx, trachea and bronchi is followed by a fairly complete chapter on foreign bodies in the respiratory tract as well as the treatment of stenoses of the larynx, trachea and bronchi. It is in the chapter on disturbances of innervation of the larynx that this volume ends in the middle of a sentence in the same manner as occurred in the first section. The arrival of the third and final section is anticipated with much pleasure in view of the fact that the second section shows the same high standard of print and illustrations as did the first.

The Art of Being a Woman. By Olga Knopf. Edited by Alan Porter. Cloth. Price, $3. Pp. 307. Boston: Little, Brown & Company, 1932.

The background of this book is training in medicine, physiology and adlerian psychology. The book begins with a brief survey of woman's position in society through the ages and particularly the importance of the inferiority complex in an earlier day. The second part is an analysis of adolescents in which incidentally there comes a consideration of the causes of prostitution, with which, however, few authorities will agree. The author takes it for granted that the initial motive is a desire for pleasure and the secondary motive a desire to make money. The book is rather opposed to prohibition, feeling that it makes indulgence in liquor a goal. There are also considerations of homosexuality and its causes. The reasons for failure of most women to marry are given most careful consideration, and also the factors underlying marriage. The points are covered again in the section on sexual adaptation and on the married woman. The concluding chapters of the book deal with the elderly woman, women in industry and the means of explaining sex to children. The volume concludes with a plea to women to stop suffering with an inferiority complex and to think they are equals of men, independent and cooperative, even if they are not. Few American women will need this advice.

Vaccination préventive de la tuberculose de l'homme et des animaux par le B C G. Rapports et documents provenant des divers pays (la France exceptée) transmis à l'Institut Pasteur en 1932. Paper. Pp. 366. Paris: Masson & Cie, 1932.

This volume opens with a reiteration of previous statements on the harmlessness of B C G, supported by citations of numerous official endorsements by scientific societies and congresses during the last four years. A summary of reports of animal experiments and clinical experience up to 1932 is presented. Recent experience in guinea-pigs, rabbits and monkeys on the whole supports the original claims of Calmette and his associates on successful preventive inoculation in these animals. Reports of equal success in the vaccination of cattle in several countries are given. Chief opposition to the method is found in North America. Calmette attributes this opposition largely to the organization of the tuberculosis eradication campaign on this continent, which is based on the tuberculin test. Widespread use of B C G in cattle and the consequent artificial production of reactors would prove confusing. Calmette feels that, successful as the campaign has been in this country, a revision of the method, to include vaccination, would be advantageous. Up to 1932 about a million children had been vaccinated, about two thirds of them in France or the French colonies. About 400 necropsy protocols, a surprisingly small number in so large a vaccinated group, appear to be on record. These indicate no progressive lesions from the B C G, although in numerous cases the organism could be isolated from lymph nodes. Some remarkable cases of accidental overdosage or intentional large

dosage in congenital defectives, without harm, are reported. A final summary is presented of the mortality in 443,656 children in 46 countries outside of France, indicating a death rate of 7.9 per cent in the vaccinated and 15.3 per cent in the non-vaccinated in the first year of life. To an unbiased reader the argument for the harmlessness of the method seems convincing. Variation in the selection of material, however, still makes an evaluation of the success of the method as a preventive procedure difficult to make.

Law and Literature and Other Essays and Addresses. By Benjamin N. Cardozo, Chief Judge of the Court of Appeals of New York. Cloth. Price, $2.75. Pp. 190. New York: Harcourt, Brace & Company, 1931.

The newly appointed member of the Supreme Court of the United States has made available in book form a number of essays on various subjects, mostly related to law. Of most interest to the physican is the essay entitled "What Medicine Can Do for Law." It indicates a thorough appreciation of the nature of scientific evidence and of the fact that the medical profession of this country is best fitted to supply such evidence in the medical field. Judge Cardozo is inclined to believe that the teachings of biochemists, of psychiatrists and of penologists will transform our whole system of punishment for crime at no distant day. He also finds a necessity for study and education of the criminal. He feels the need for reform in the determination of insanity and points out that this reform must come in legislation rather than in court procedure.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Die gesunde und kranke Wirbelsäule im Röntgenbild: Pathologisch-anatomische Untersuchungen. Von Geh. Med.-Rat Prof. Dr. Georg Schmorl. Für die Röntgenkunde bearbeitet von Dr. med. Herbert Junghanns. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband XLIII. Herausgegeben von Prof. Dr. Grashey. Paper. Price, 30 marks. Pp. 211, with 345 illustrations. Leipzig: Georg Thieme, 1932.

This is a monograph on the pathologic anatomy of the vertebral column, presented with an extensive bibliography. The illustrations emphasize especially the developmental defects encountered in the spinal column. Phases of the intervertebral disk are dealt with at length. The vast amount of anatomic material at the disposal of Dr. Schmorl and the variety of lesions described in such an authoritative manner make the monograph invaluable to all interested in spine lesions, especially the roentgenologist and the orthopedic surgeon.

The Home Nurse's Handbook of Practical Nursing: A Manual for Use in Home Nursing Classes in Young Women's Christian Associations, in Schools for Girls and Young Women, and a Working Text-Book for Mothers, "Practical" Nurses, Trained Attendants, and All Who Have the Responsibility of the Home Care of the Sick. By Charlotte A. Aikens, R.N. Fifth edition. Cloth. Price, $2. Pp. 331, with illustrations. Philadelphia: W. B. Saunders Company, 1931.

This volume has passed through five editions and numerous reprintings, probably because it is one of the most practical books in this field. It is, furthermore, a thorough consideration of its subject. It includes not only numerous hints on preventive medicine but a great deal of helpful material on the care of the sickroom, care of the invalid, dietetics, methods of giving remedies, bandaging, first aid, and nursing in general. The illustrations unfortunately have not been as carefully revised as has the text. There is not the slightest reason for showing home nurses Peyer's patches or the appearance of a culture of tubercle bacilli. The majority of the pictures are, however, attractive.

A Bibliography of the Honourable Robert Boyle, Fellow of the Royal Society. By John F. Fulton, M.A. Paper. Pp. 172, with a portrait. Oxford: University Press, 1932.

This compilation of the writings of Boyle can be of interest solely to the special student who is willing to undertake the formidable task of assessing Boyle's scientific achievements. The main body of the volume lists chronologically not only the appearance of the various books but also the various editions of these books, location of the copies, and facsimiles of the title pages. In each case the history of the book and the nature of its more important contents are indicated. This volume was certainly a herculean task involving, figuratively speaking, an infinite number of hours of the most patient type of scholarly labor—surely an all-absorbing occupation which few real scholars possess. Having erected the solid foundations for the scientific evaluation of Boyle's scientific career, the author might well make the scientific assay, for no one else is better qualified to do so.

The Lame, the Halt, and the Blind: The Vital Rôle of Medicine in the History of Civilization. By Howard W. Haggard, M.D., Associate Professor of Applied Physiology, Yale University. Cloth. Price, $4. Pp. 420, with 200 illustrations. New York & London: Harper & Brothers, 1932.

Most of the essays in this book were prepared by the author for the Medical Division of the Eastman Kodak Company and presented by him over the radio during the Eastman Hour. The essays touch every aspect of medicine from an historical point of view and are likewise related to current trends, since many of the notions of the past are in the credulities of the present. The book is handsomely illustrated with numerous historical items and has an exceedingly good index. For collateral reading in medicine, it is delightful. If any criticism at all is to be made of the book, it is for the lack of any orderly arrangement or system to bind the essays together.

The Cambridge Medical School: A Biographical History. By Sir Humphry Davy Rolleston, Bart., G.C.V.O., K.C.B., M.D., Regius Professor of Physic in the University of Cambridge. Cloth. Price, $5. Pp. 235, with 21 portraits. Cambridge: University Press, 1932.

This book contains an interesting account of Cambridge in its vicissitudes and its glory, giving a description of the medical school from its beginning to the present day. The various departments (anatomy, physiology, biochemistry, experimental psychology, pathology, biology, physic) are taken up in separate chapters. There are portraits of those who added much to the glory of the institution, including such men as Caius, Heberden, Sir Michael Foster, Langley, Gaskell, Roy, Kanthack, Woodhead, Clobery, Glisson, Paget and Allbutt.

Twenty-Five Years: A Memorial Volume in Commemoration of the Twenty-Fifth Anniversary of the Vineland Laboratory, 1906-1931. Edited by Edgar A. Doll, Ph.D., Director of Research. Series 1932, No. 2. Fabrikoid. Pp. 135. Vineland, N. J.: Training School at Vineland, New Jersey, Department of Research, 1932.

This book is published in commemoration of the twenty-fifth year celebration of the establishment of the Vineland Laboratory and School for Training of the Feeble-Minded. It includes the addresses delivered on that occasion, with a record of the personnel and publications since the institution was established. The essays include, among others, contributions by Gesell on "The Study of Genetic Psychology," by Edgar A. Doll on "The Outlook for Further Research," and by Earl Barnes on "Child Research and Social Progress."

Landois' Lehrbuch der Physiologie des Menschen, mit besonderer Berücksichtigung der praktischen Medizin. Bearbeitet von Dr. med., Dr. phil. h. c. R. Rosemann, o. ö. Professor der Physiologie und Direktor des Physiologischen Instituts der Westfälischen Wilhelms-Universität zu Münster. Twentieth edition. Paper. Price, 22.50 marks. Pp. 850, with 168 illustrations and one portrait. Berlin: Urban & Schwarzenberg, 1932.

The nineteenth edition of this book was reviewed in THE JOURNAL, Jan. 4, 1930, page 56. Aside from an eight page increment, the plan and execution are the same as in the previous edition. Valuable as a scientific textbook, it may be recommended particularly to physicians and graduate students of medicine who desire to read with profit while reviewing their knowledge of German.

Poems of Science. By William Pallister, B.A., M.D., C.M. Cloth. Price, $2.50. Pp. 248, with 17 illustrations. New York: Playford Press, 1931.

The author of this volume studied physics, bacteriology and pathology under competent teachers. His volume is a combination of essays and poems on the nature of things, on man and the stars, and on many other scientific subjects. The poems prove quite perfectly that scientific diction does not lend itself easily to poetical manipulation.

The Structure of Insanity: A Study in Phylopathology. By Trigant Burrow, M.D., Ph.D. (Psyche Miniatures, General Series No. 40). Boards. Price, 2/6. Pp. 80. London: Kegan Paul, Trench, Trubner & Company, Ltd., 1932.

This essay presents Dr. Burrow's views on the social relationships of insanity and the necessity for studying the morphologic data involved in the distortion of man's attention as a social process.

Medicolegal

Patient's Wealth and Physician's Fee

(Glenn v. Thompson (Mo.), 45 S. W. (2d) 948)

The plaintiff removed the defendant's prostate gland and attended him over a period of forty-one days, never visiting him less than twice a day and often three and four times a day. He rendered a bill for $1,050. The defendant thought $500 a sufficient fee, paid that amount, and the plaintiff sued him for the balance. The trial court excluded testimony tending to show the defendant's financial ability to pay and, at the request of the defendant, charged the jury as follows:

> The court instructs the jury that the financial ability or inability of the defendant to pay plaintiff the reasonable value of the services . . . cannot be considered by the jury or taken into consideration in determining the reasonable value of such services as the jury may find under the evidence were rendered defendant by the plaintiff.

The jury returned a verdict for the defendant, and the plaintiff appealed to the St. Louis court of appeals.

In excluding evidence as to the defendant's wealth and in instructing the jury as it did, the trial court erred, said the appellate court. A usage and custom in the profession, in fixing the fee for an operation, to give some consideration to the ability of the patient to pay, was testified to by witnesses both for the plaintiff and for the defendant, said the court. That fact, therefore, must have been in the contemplation of the parties when the service was rendered, and necessarily must be one of the elements to be considered on a trial which proceeded on that theory. Furthermore, witnesses for the defendant testified that a reduction in fee is generally made in case a patient is unable, financially, to pay the usual fee. Evidence of the defendant's wealth was admissible, therefore, to show that he was not entitled to such a reduction. The defendant's family physician, who referred the defendant to the plaintiff, in testifying for the defendant, admitted that the practice of physicians was to charge varying fees for the same class of operations, and that the charge for an operation such as the one involved in this case varies from nothing to $3,500, depending somewhat on the ability of the patient to pay. This physician, said the court, must have realized that his patient was in a critical condition and that immediate attention by a skilled surgeon was essential. He must have known, continued the court, that the case was one that justified the risk of a higher charge by a surgeon of known skill and must have had some idea as to the defendant's ability to pay for the kind of service he was seeking. For error committed by the trial court in refusing to admit evidence as to the financial ability of the defendant to pay the fee charged and in instructing the jury as it did, the judgment in favor of the defendant was reversed and the case remanded.

Abdominal Pregnancy, Accident and Therapeutic Abortion.—The appellee, Mrs. Sieber, was injured in an accident, September 8. She was operated on, October 17, and an abdominal pregnancy of three months' duration was discovered. In a suit against the appellee, Abend, she contended, among other things, that by reason of the accident she was caused to "suffer a miscarriage." The trial court gave judgment for Mrs. Sieber, and Abend appealed to the Court of Appeals of Maryland. There was no evidence, said the court, that the accident had anything to do with the abortion and none to show that an abortion would not have been necessary even if the accident had not occurred at all. When an injury for which damage is claimed, in this case an operation for extra-uterine pregnancy, follows in point of time the accident for which suit is brought, and the subsequent development usually has its peculiar and independent cause, then the original accident as the exciting cause of the ultimate effect must be affirmatively shown. This was not done in this case. When disease or infection is set in motion or aggravated by injury or when the accident may be followed by disease or injury as its cause, damages may be recovered for such unexpected results, but in every instance proof of such facts is required and nothing is assumed. The proof of the effect of the accident on the extra-uterine pregnancy was a matter, the court said, to be testified to by one skilled in medicine or surgery. No such witness testified. The judgment of the trial court, in favor of Mrs. Sieber, was therefore reversed and the case remanded for a new trial.—*Abend v. Sieber (Md.), 158 A. 63.*

Expert Testimony Based on Roentgenogram Not in Evidence.—In proceedings before the Oklahoma Industrial Commission, a physician testified that he had taken a roentgenogram of the claimant's spinal column. The roentgenogram was not offered in evidence but the physician was permitted, over the objection of the employer and his insurance carrier, to testify as to the condition indicated by the roentgenogram. The roentgenogram, said the Supreme Court of Oklahoma, was the best evidence as to what it indicated. Ordinarily a roentgenogram must be explained or interpreted by a medical expert. The witness was competent to do so, but the employer and his insurance carrier were entitled to examine the roentgenogram for the purpose of cross-examining the witness, and, if they so desired, were entitled to submit it to other experts for interpretation. The physician should not have been permitted to testify unless the roentgenogram was offered in evidence or some proper reason given why it could not have been produced. —*Patrick & Tillman v. Matkin (Okla.), 7 P. (2d) 414.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Montreal, Sept. 19-23. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb., Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American Association of Railway Surgeons, Chicago, November 2-4. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Surgeons, St. Louis, October 17-21. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Physical Therapy Association, Detroit, September 28-30. Dr. C. C. Vinton, 241-02 S. Conduit Blvd., Rosedale, N. Y., Secretary.

American Public Health Association, Washington, D. C., October 24-27. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.

American Roentgen Ray Society, Detroit, September 27-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Associated Anesthetists of the United States and Canada, New York, October 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Hartford, Conn., October 20-22. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, Memphis, Tenn., September 15-17. Dr. E. D. Plass, University Hospital, Iowa City, Secretary.

Delaware, Medical Society of, Lewes, September 27-28. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.

Idaho State Medical Association, Pocatello, Sept. 16-17. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Michigan City, September 27-29. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Indianapolis, October 24-28. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.

Kentucky State Medical Association, Louisville, October 3-6. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Northern Minnesota Medical Association, Crookston, Sept. 19-20. Dr. O. O. Larsen, Detroit Lakes, Secretary.

Oregon State Medical Society, Klamath Falls, Sept. 22-24. Dr. Albert W. Holman, 410 Taylor Street, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, October 3-6. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Minnesota Medical Association, Rochester, Sept. 12. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.

Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Vermont State Medical Society, Burlington, October 6-7. Dr. William G. Ricker, 31 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Richmond, November 1-3. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

43: 1433-1653 (June) 1932

*Respiratory Failure in Poliomyelitis: Treatment with Drinker Respirator. J. L. Wilson, Boston.—p. 1433.
*Seasonal Variation in Antirachitic Action of Arkansas Sunshine. P. L. Day, Little Rock, Ark.—p. 1455.
*Treatment of Congenital Syphilis with Acetarsone (Stovarsol) Given by Mouth. C. H. Maxwell, Jr., Auburn, N. Y., and J. Glaser, Rochester, N. Y.—p. 1461.
Psychic Enuresis in Normal Children: Experimental Study. J. M. Lewis and J. Ostroff, New York.—p. 1490.
*Adenoids and Immunity. H. B. Lemere, Los Angeles.—p. 1494.
Study of Effects of Ultraviolet Irradiation on Group of Preschool Children: Preliminary Report. Helen Dudley Bull, G. H. Maughan and Ethel B. Waring, Ithaca, N. Y.—p. 1502.
*Antirachitic Value of Milk from Cows Fed Irradiated Yeast. E. T. Wyman and A. M. Butler, Boston.—p. 1509.
Study of Water and Mineral Balances in Epileptic Children: I. Effects of Diuresis, Catharsis, Phenobarbital Therapy and Water Storage. I. McQuarrie, Minneapolis, and R. C. Manchester and Clara Husted, Rochester, N. Y.—p. 1519.
Respiratory Metabolism in Infancy and in Childhood: XIV. Effect of Thyroid Therapy on Metabolism of Protein in Normal Infants. L. E. Weymuller, Brooklyn; T. C. Wyatt, Syracuse, N. Y., and S. Z. Levine, New York, with technical assistance of M. Kelly.—p. 1544.
Ganglioneuroma: Report of Two Cases with Review of Literature. J. A. Bigler and A. Hoyne, Chicago.—p. 1552.

Respiratory Failure in Poliomyelitis.—Wilson reports that in six children suffering from poliomyelitis who had paralysis of the intercostal muscles and the diaphragm without complications (such as pneumonia), the Drinker respirator was efficient in maintaining pulmonary ventilation for long periods. A therapeutic trial of the respirator seems desirable as soon as possible after any reduction of the vital capacity is discovered which is due to weakness of the respiratory muscles. Marked dyspnea or cyanosis should not be awaited as indications for initiation of treatment. The action of the respirator seemed very effective in two children with bulbar paralysis without intercostal involvement who had a sudden complete cessation of respiration after choking. The use of the machine seemed sometimes helpful but was often entirely ineffective in nine children with bulbar paralysis, without intercostal involvement, who had a disturbed central control of respiration manifested by irregular breathing. Only two of these nine children lived. The use of the machine in cases of bulbar paralysis without intercostal involvement is not recommended except as an emergency and after every attempt has been made to free the pharynx from secretions. It was not always possible to foretell accurately the effectiveness of the respirator before therapeutic trial. Except for moderate emphysema found at necropsy in three patients with bulbar paralysis, no evidence of harm due to the use of the machine was discovered.

Antirachitic Action of Sunshine.—Day made biologic determinations of the antirachitic action of sunshine at Little Rock at all times of the year with large groups of animals under carefully controlled conditions. The average daily amount of sunshine necessary to afford the same partial protection against rickets in rats receiving a rachitic diet varied from 5 minutes in May, June and July to 168 minutes in December, with intermediate values for the other months.

Treatment of Congenital Syphilis with Acetarsone.—Maxwell and Glaser state that acetarsone probably has a definite place in the treatment for congenital syphilis. That the drug cannot be used indiscriminately, as the reports from some foreign clinics might be interpreted to suggest, is amply demonstrated by the one fatality and the toxic manifestations that occurred in the authors' small series. The advantages of the oral treatment for congenital syphilis over the methods usually employed are evident. However, the exact position that acetarsone should occupy in the treatment for congenital syphilis, at least as far as this country is concerned, remains yet to be determined by those who have at their disposal sufficient clinical material for the study this drug deserves, and sufficient interest to follow their cases carefully, so that there will be a minimum of danger to the patients.

Adenoids and Immunity.—Lemere calls attention to the fact that the adenoid is a physiologic and lymphatic structure with a definite form and admirably designed to expose the greatest possible lymphatic surface as a barrier to the entrance of nasal infection through the nasopharyngeal mucosa into the general circulation. He reports that in a series of more than 300 children the adenoids were left at the time the tonsils were removed. Daily expulsive blowing exercises were insisted on as after-treatment. Nasal breathing improved; colds and sinus symptoms and acute and chronic aural conditions were less frequent.

Pasteurized Yeast Milk.—Because of the possibility of difference in the specific factors in viosterol and milk from cows fed irradiated yeast and because there are certain advantages in the inclusion of the antirachitic factor in the food of infants rather than adding it as a separate therapeutic agent, Wyman and Butler studied the effectiveness of such "yeast milk" in the healing of active rickets in children. They found that the special pasteurized yeast milk was an effective source of antirachitic substance as determined by its ability to cause healing in advanced active rickets in infants and advanced chronic rickets in children. After five minutes' boiling, the milk still possessed antirachitic properties. The administration of antirachitic vitamin in so palatable a form and in a food so essential and generally used as milk would seem to have certain advantages.

Archives of Internal Medicine, Chicago

49: 879-1101 (June) 1932

*Treatment of Cardiovascular Syphilis: Results Obtained in Fifty-Three Patients with Aortic Aneurysm and in One Hundred and Twelve with Aortic Regurgitation. J. E. Moore, Baltimore; J. H. Danglade, Kansas City, Mo., and J. C. Reisinger, Washington, D. C.—p. 879.
*Possible Relationship of Pancreatic Insufficiency to Addison-Biermer (Pernicious) Anemia. G. Cheney and F. Niemand, San Francisco.—p. 925.
*Thiocyanate Therapy in Hypertension: II. Its Effect on Blood Pressure. W. Goldring and H. Chasis, New York.—p. 934.
Cinchophen Hepatitis: Experimental Study. H. B. Myers and L. Goodman, Portland, Ore.—p. 946.
*Absorption of Compound Solution of Iodine from Gastro-Intestinal Tract, with Especial Reference to Absorption of Free Iodine. B. N. E. Cohn, Philadelphia.—p. 950.
Immunity to Tuberculosis: Relation of Cutaneous Allergy and Resistance to Tuberculous Infection Following Vaccination with B C G. J. Heimbeck, Oslo, Norway.—p. 957.
*Prolonged Use of Massive Doses of Urea in Cardiac Dropsy. H. R. Miller and A. Feldman, New York.—p. 964.
Tryptophanuria and Its Significance: Preliminary Report. A. T. Brice, Jr., Palo Alto, Calif.—p. 978.
Calcium Studies: VII. Calcium and Inorganic Phosphorus Content of Cerebrospinal Fluid and Blood Serum in Chronic Glomerulonephritis with Uremia. A. Cantarow, Philadelphia.—p. 981.
Cardiac Output Following Artificial Pneumothorax in Man. D. W. Richards, Jr., Constance B. Riley and Mabelle Hiscock, New York.—p. 994.
*Pancreatic Extract in Treatment of Angina Pectoris and Intermittent Claudication. F. R. Nuzum and A. H. Elliot, Santa Barbara, Calif.—p. 1007.
Some Factors Determining Insensible Perspiration of Man. F. G. Benedict and H. S. H. Wardlaw, Boston.—p. 1019.
Clinical Significance of Volume and Hemoglobin Content of Red Blood Cell. R. L. Haden, Cleveland.—p. 1032.
Primary Cancer of Lung: Clinical and Pathologic Survey of Fifty Cases. W. L. Rogers, San Francisco.—p. 1058.
*Streptococci in Blood in Rheumatic Fever, Rheumatoid Arthritis and Other Diseases: Based on Study of Five Thousand Two Hundred and Thirty-Three Consecutive Blood Cultures. S. S. Lichtman and L. Gross, New York.—p. 1078.

Treatment of Cardiovascular Syphilis.—Moore and his associates present a general consideration of the subject of the treatment of cardiovascular syphilis, based on 53 patients with aortic aneurysm and 112 with aortic regurgitation. In 20 of the 165 patients, the aneurysm or the aortic regurgitation had not caused symptoms and was accidentally discovered during routine physical examination. The onset of symptoms was

usually abrupt but sometimes was slow and insidious. All except 13 of the 165 patients in this series had been subjected to the strain of hard physical labor. The most frequent association with other lesions of syphilis was that with syphilis of the central nervous system (especially tabes dorsalis), which occurred in from 17 to 18 per cent of the patients. An additional 17 per cent of patients with cardiovascular syphilis, but without clinical evidence of neurosyphilis, had abnormal spinal fluids. The actual incidence of complicating neurosyphilis was thus about 35 per cent. Positive Wassermann reactions of the blood were obtained for 98 per cent of the patients with aneurysm and 96 per cent of those with aortic regurgitation. One hundred and forty-seven (89 per cent) of the patients had never received any treatment for syphilis before the development of cardiovascular syphilis. Of the remainder, not one had received adequate treatment for early syphilis. Only 4 of the 165 had received arsphenamine at the time of early syphilis, and none of these got more than three injections. These data constitute a powerful argument for the adequate treatment of early syphilis. They also indicate that modern antisyphilitic treatment is probably not responsible for the apparent increase in the incidence of syphilitic aortitis. From the analysis of their material, the authors conclude that properly supervised antisyphilitic treatment, with adequate general medical care, given to patients with aneurysm or aortic regurgitation, prolongs life, alleviates symptoms, maintains the ability to pursue a gainful occupation and reduces the period of incapacity.

Relationship of Pancreatic Insufficiency to Pernicious Anemia. — According to Cheney and Niemand, the present conception of Addison-Biermer anemia is that it is a deficiency disease due to an inadequate supply of a protein derivative necessary to normal maturation of red blood cells. As a result of successful experiments in feeding beef digested with normal human gastric contents to patients with Addison-Biermer anemia, Castle has concluded that the cause of the disorder is dependent on the gastric achylia. The nature of this supposed gastric defect has remained unproved, and he has termed it the unknown intrinsic factor. Recent studies of the gastric contents during fasting and duodenal contents strongly suggest that in cases of Addison-Biermer anemia there is a marked insufficiency of the pancreatic enzymes, notably trypsin, in addition to the gastric achylia. The macrocytosis characteristic of this anemia has also been frequently observed in pancreatic disorders. Feeding experiments performed by the authors, in which solutions of trypsin were used to digest beef, failed to produce any effect on the blood changes in cases of Addison-Biermer anemia. Feeding experiments in which an artificial gastric content containing hydrochloric acid, pepsin and trypsin was used to digest beef in three instances in two cases of Addison-Biermer anemia and in one instance in a case of sprue with a similar blood picture produced changes in the red blood cell count, hemoglobin determinations and retriculocyte response similar to those obtained by Castle. Changes in the average diameter of the red cells characteristic of a beginning remission after liver therapy occurred in these four instances and also in two others when very small amounts of trypsin were used. No other evidence of improvement in the blood changes was detected in the last two cases. The authors' feeding experiments show that beef digested by hydrochloric acid, pepsin and trypsin yields the erythrocytic maturation factor necessary to produce all the blood changes characteristic of a remission in pernicious anemia. The changes demonstrated are not as pronounced as those in adequate liver therapy but are on the whole more like those in inadequate treatment with liver. It seems probable that the protein derivative deficiency in Addison-Biermer anemia is due to a lack of both peptic and tryptic digestion. Trypsin would then represent the unknown intrinsic factor of Castle.

Thiocyanate Therapy in Hypertension.—Goldring and Chasis present data on fifty patients with hypertension subjected to seventy-four trials with thiocyanate therapy. In forty-six of these patients it was associated with chronic diffuse glomerulonephritis. Forty-four trials were made in the outpatient clinic and thirty with the patients confined to the hospital. Observations were made on the daily excretion rate of thiocyanate in the urine and the number of days necessary for its complete elimination after continuous medication and after a single dose in patients with essential hypertension and nephritic hypertension and in normal persons. Toxic effects of thiocyanate were not observed in four patients with chronic diffuse glomerulonephritis, three of whom responded by a satisfactory fall in blood pressure. Therapeutic, toxic or fatal effects could not be anticipated from the amount of the drug administered. The dosage found to be most effective in lowering blood pressure and least often attended by toxic manifestations was 0.326 Gm. (5 grains) given daily over a period of from fourteen to seventy-eight days. Thiocyanate was 31 per cent effective in lowering blood pressure in this series. Toxic manifestation occurred in thirteen patients, or 17 per cent, of the total group studied.

Absorption of Iodine from Gastro-Intestinal Tract.—Cohn reports studies on the rate of absorption of free iodine in aqueous solution, of diluted compound solution of iodine and of potassium iodide and potassium iodate from the gastro-intestinal tract of the dog. These studies show that the iodine is converted to iodide before it is absorbed. If these studies are applicable to the human being, they would seem to refute the assertion that compound solution of iodine is more beneficial than potassium or sodium iodide in controlling the high basal metabolism of exophthalmic goiter, since, when compound solution of iodine is used, the percentage of iodine absorption is no greater than when potassium or sodium iodide is administered.

Use of Urea in Cardiac Dropsy.—Urea administered in massive doses according to a method described by Miller and Feldman was found to be an effective diuretic over long periods of time in selected cases of cardiac dropsy. Whereas it can function alone over many months in keeping the patient edema-free, it may require the supplemental use of other diuretics. This is true for the patient with or without auricular fibrillation. Cases are reported in which its unbroken administration continued over three years. Urea does not impair the function of the kidneys or alter their histologic structure after prolonged administration. Once the signs of congestive heart failure have been removed, urea is valuable in preventing their recurrence. The drug tends to maintain the patient's weight at a low and constant edema-free level over months and even years. During such periods, the authors' patients often required little or no restrictions of the intake of fluid or salt within ordinary dietary limits.

Pancreatic Extract in Angina Pectoris and Intermittent Claudication.—An insulin-free extract of the pancreas, a vasodilator that modifies the pressor effects of epinephrine and dilates the coronary arteries of the rabbit's heart to a degree exceeding that produced by drugs of the purine group, was administered intramuscularly by Nuzum and Elliot to twenty patients with angina pectoris. Two, or 10 per cent, were not helped; five, or 25 per cent, were somewhat relieved; eleven, or 55 per cent, were greatly helped, and two who were benefited by treatment died later. Forty-one patients with angina pectoris who received the usual medical treatment and were followed for a like period were studied as a control series. In ten instances, or 24.3 per cent, no benefit was observed; fourteen patients, or 34.1 per cent, experienced moderate relief; fourteen received pronounced benefit, and three, or 7.4 per cent, died. Five patients with intermittent claudication, one with thrombo-angiitis obliterans and one with cerebral vascular spasms and angina pectoris were benefited in a pronounced degree by treatment with the extract.

Streptococci in Blood in Rheumatic Fever.—In a study of 5,233 consecutive blood cultures in a general hospital, Lichtman and Gross found that with adequately sensitive methods an incidence of nonhemolytic streptococcemia (alpha and gamma types) between 4 and 15.5 per cent with an average of 6 + per cent occurs in at least nine diseases; i. e., acute rheumatic fever with polyarthritis, chronic rheumatic cardiovascular disease, rheumatoid arthritis, aplastic anemia, pernicious anemia, leukemia, colitis, meningococcus meningitis and pyelitis and pyelonephritis. On the basis of the incidence of the "transient" streptococcemia alone, these organisms cannot justifiably be considered as the causative agents of these diseases.

Archives of Ophthalmology, Chicago

7: 831-1001 (June) 1932

*Correction of Ptosis and Epicanthus. V. P. Blair, J. B. Brown and W. G. Hamm, St. Louis.—p. 831.
Uveitis with Dysacousia, Alopecia and Poliosis. B. Rones, Baltimore.—p. 847.
Lupus Erythematosus of Conjunctiva, Eyelids and Lid Margins. J. V. Klauder and P. DeLong, Philadelphia.—p. 856.
*Some Notes on Orbital Tumors. B. Samuels, New York.—p. 868.
Vitreous in Experimental Detachment of Retina. L. L. Mayer, Chicago.—p. 884.
*Anterior Chamber Punctures in Relation to Intra-Ocular Tension: Clinical Study. S. V. Abraham, Los Angeles.—p. 888.
*Postoperative Care Without Bandages. E. B. Rabkin, Kharkow, the Ukraine.—p. 901.
Size and Shape of Ocular Images: III. Visual Sensitivity to Differences in Relative Size of Ocular Images of the Two Eyes. A. Ames, Jr., and K. N. Ogle, Hanover, N. H.—p. 904.
Etiology of Strabismus. R. I. Lloyd, Brooklyn.—p. 934.

Correction of Ptosis and Epicanthus. — Blair and his associates say that, in the absence of any action of the levator palpebrae muscle, the patient is apt to attain some elevation of the paralyzed lid by overaction of the occipitofrontalis muscle. This suggested that a direct fixation of the tarsus of the upper lid to the occipitofrontalis muscle would give much better elevation of the lid than does the simple continuity of the somewhat fixed tissues of the brow. Various plans have been proposed for doing this, but it is the authors' belief that the most satisfactory is the direct connection by means of a live tendon cut from autogenous tissue. For this purpose they have used thin strips of fascia lata, which will give permanent live and approximately natural connective tissue fixation. Even when previously inactive, this extra load may stimulate a lagging occipitofrontalis muscle to increased movement. Because congenital ptosis and epicanthus may occur in the same case, and the scar contraction that causes a traumatic epicanthus may also prevent proper elevation of the lid, the correction of epicanthus is considered with that of ptosis. Correction in the congenital type can usually be obtained by flap switching that adds vertical length at the expense of the transverse redundancy. In the traumatic type it may be necessary to use a skin graft or switch a flap from a distant site. Elevating a flat nasal bridge will help in appropriate cases.

Orbital Tumors. — Samuels presents a brief pathologic review of some of the tumors of the retrobulbar space, the so-called concealed tumors, including those of the optic nerve, all of which sooner or later produce exophthalmos. Attention is drawn more particularly to the manner in which the preexisting structures react to the presence of tumors rather than to the morphology of the tumors themselves. The theme is presented in the form of clinical cases that have yielded anatomic material for study.

Anterior Chamber Punctures in Relation to Intra-Ocular Tension. — Abraham states that animal and human experimental data on the effects of anterior chamber punctures are in agreement. This includes the changes in intra-ocular tension following withdrawal of the aqueous. The usual reaction of a normal eye to a withdrawal of the aqueous would be hyperemia, particularly of the ciliary body, and hypertonia. Hypotonia may result following withdrawal of the aqueous if the eye shows subnormal function, as in atrophies and amblyopia, or if the ciliary body is decreased in activity, as by atropine. In cases of primary glaucoma, intra-ocular tension following anterior chamber puncture and withdrawal of the aqueous may be higher than before puncture, may be lower than before puncture, though above normal, or may show no pathologic tension. In cases of secondary glaucoma the same condition may be present. No inflammatory or glaucomatous process seems necessary to obtain a high tension following withdrawal of the aqueous, even when no previous high tensions have been present. The hypertonia in normal eyes following anterior puncture may be as high as that found in pathologic conditions.

Postoperative Care Without Bandages. — According to Rabkin, a number of ophthalmologic clinics and hospitals in America and Europe are using simplified ocular dressings. This tendency may eventually lead to the use of the open method. In no case has there been any complication that could be attributed to the use of the open method. Indeed, there are certain advantages. The postoperative period is usually shorter and the patient more comfortable. No trauma of the eye has been observed, and the author does not believe it to be more frequent in the open method, if the patient has been sufficiently instructed. Apparently, the character of the bacterial flora is unchanged in the open method. Control and observation of the wound are easier, and time and work are saved. The author believes that this method deserves more consideration from ophthalmologists in general.

Archives of Otolaryngology, Chicago

15: 805-977 (June) 1932

*Association of Osteomyelitis of Skull and Nasal Accessory Sinus Disease. A. O. Wilensky, New York.—p. 805.
Graphic Method and Chart for Hearing Test with Tuning Forks. A. Roth, Brooklyn.—p. 834.
Illumination of Ear: Short Historical Sketch. E. Amberg, Detroit.—p. 838.
*Intratracheal Inhalation Anesthesia in Practice. P. J. Flagg, New York.—p. 844.
*Pins at Periphery of Lung: Observations Based on Forty-Two Cases. C. Jackson and C. L. Jackson, Philadelphia.—p. 860.
Calcigerous Metaplasia in Auricle: Report of Two Cases. J. H. Childrey, Santa Barbara, Calif.—p. 883.
Suppurative Meningitis of Otitic and Nasal Origin: Its Relation to Blood Stream Invasion of Pial Vessels. W. P. Eagleton, Newark, N. J.—p. 885.
Chronic Progressive Deafness, Including Otosclerosis and Disease of Inner Ear. J. K. M. Dickie, Ottawa, Canada.—p. 913.

Osteomyelitis of Skull and Nasal Accessory Sinus Disease.—Wilensky discusses the cases of osteomyelitis of the skull that are found to complicate acute and chronic disease of the nasal accessory sinuses. He considers only cases due to infection by the ordinary pyogenic bacteria. The clinical picture presented by the majority of these cases is similar. The infection that leads to the fatal result is usually postoperative and occurs within two or three days after an operation for disease of the nasal accessory sinuses. The diploe of the frontal bone is invaded by the organisms, and an osteomyelitis is set up. The infection spreads, on the one hand, through the outer table, giving rise to subperiosteal abscesses beneath the scalp; it passes inward, on the other hand, and may subsequently give rise to extradural or subdural abscess, general meningitis, cerebral abscess or a thrombosis of the longitudinal or other large sinuses. The dura mater is affected in practically all cases, and the pachymeningitis may remain localized a long time. Thrombosis occurs chiefly in the lateral or longitudinal sinuses. The invasion of a large venous sinus is often manifested by emboli with distant metastases. Pneumonia and bronchopneumonia occur frequently. It is generally easy to make a diagnosis of osteomyelitis in the bones near the orbit or ear. However, it is often difficult to recognize the diffuse form because the general symptoms are often more pronounced and may mask the local symptoms. A diagnosis can be made before operation from a careful study of the symptoms that accompany the sinusitis or mastoiditis. It is necessary to operate when the osteomyelitis becomes evident, and the operation should be as extensive as possible. The cranial bones should be resected beyond the limits of the lesion. If the wound continues to granulate and if the temperature remains high, sequestrums are present and they must be removed as completely as possible. There is a large mortality. The patient succumbs to one or more of these conditions with or without the manifestations of a general blood infection, as evidenced by the presence or absence of a positive blood culture, after a varying number of weeks or months ranging to one or more years.

Intratracheal Inhalation Anesthesia.—Flagg describes the technic of intratracheal inhalation anesthesia that he has used as a routine method in the last four years. In his hands, trauma has not followed this technic. He believes that this absence of trauma has been partly due to each of the following factors: adequate ether relaxation, elimination of preliminary medication (morphine and atropine), adequate exposure, lubrication of the tube and the use of a mouth gag when intubating. In this technic, adequate suction must always be available for the best results. In order to reduce the irritability and the diameter of the intubated element, a pharyngeal gauze pack is preferred to an intratracheal balloon. Irritation is caused by the pharyngeal pack unless care and lubrication are employed

in placing it. Experience has shown that the cough spasm following intubation may readily be controlled and its effects promptly met. The technic of intratracheal inhalation provides a functioning equipment for artificial respiration in the case of respiratory failure. Routine cocainization was avoided, ether relaxation being employed instead. While any anesthetic agent may be employed, ether is the anesthetic of choice in the majority of cases. The opinion appears to be that intubation carried out in the manner prescribed by the author does not predispose to laryngeal tuberculosis in a case presenting pulmonary tuberculosis, and that the presence of the intratracheal tube through the facilities afforded for suction of the trachea provides one of the most efficient means of reducing postoperative morbidity in thoracic operations. It has been found that the method is indicated in all operations on the head and neck, and in any condition in which aspiration is to be avoided.

Pins at Periphery of Lung.—The Jacksons call attention to the fact that pins at the periphery of the lung are practically always lodged head downward. This may be due to the catching of the point and the tumbling over of the head end, and partly to the fact that the head end is the heavier. The primary cause of pins in the lungs is carelessness in putting pins in the mouth. The secondary etiologic factors are numerous. The cause of the pin reaching the periphery is a pawl and ratchet-like action of the pin; the head is free to move downward during inspiratory elongation of the bronchi, and the point catches and resists upward movement during the bronchial shortening of expiration and coughing. The limit of downward travel is the smallest bronchus that the head of the pin can enter. After the initial choking, gagging and coughing there is, in the case of pins at the periphery of the lung, a symptomless interval of a number of months. Sooner or later, however, suppurative changes, with productive coughing and progressively increasing impairment of health, supervene, and a fatal ending may eventually occur if the pin is not removed. All pins at the periphery of the middle and lower lobes and descending branches of the upper lobes can be removed through the mouth by peroral costophrenic bronchoscopy. The ascending branches of the upper lobes present great difficulties, but fortunately their invasion by pins is exceedingly rare.

Archives of Pathology, Chicago

13: 857-1021 (June) 1932

*Tumors of Muscle Type: Report of Group of Cases, with Especial Reference to Metastasis of Leiomyosarcoma of Brain. J. S. Cohen, Philadelphia.—p. 857.

Local Tissue Immunity. G. A. Pacheco, Chicago.—p. 868.

Stem Cell of Monocyte. J. F. Rinehart, Boston.—p. 889.

Experimental Abscesses in Rabbit: Cytology and Drainage. E. T. Thorsness, Rochester, Minn.—p. 899.

Pharyngo-Esophageal Diverticulum with Subdiverticular Esophageal Stenosis, Foreign Body Impaction and Sudden Death: Report of Case. J. I. Tuell, Portland, Ore.—p. 905.

*Experimental Thrombo-Angiitis Obliterans: Bacteriologic and Pathologic Studies. B. T. Horton and Anna H. E. Dorsey, Rochester, Minn. —p. 910.

Combined Congenital Exstrophy of Female Urinary Bladder and Cloaca. G. A. Kernwein, Chicago.—p. 926.

Origin and Antiquity of Syphilis: Evidence from Diseased Bones: Review, with Some New Material from America. R. U. Williams, Buffalo.—p. 931.

Tumors of Muscle Type.—According to Cohen, the incidence of muscle tumors varies with the type. Leiomyoma occurs frequently, especially in the uterus. Leiomyosarcoma is less frequent, according to the author's studies, than is generally claimed. He describes what appears to be the first case of metastasis of leiomyosarcoma to the brain. Rhabdomyoma occurs very rarely. Rhabdomyosarcoma is rare. The diagnosis of muscle tumors depends on close observation of the type of cell; i. e., the finding of spindle-shaped cells arranged in whorl formation or of cross-striations in large, irregular cells. Mallory's and Van Gieson's differential stains are of diagnostic aid.

Experimental Thrombo-Angiitis Obliterans.—Horton and Dorsey obtained acutely inflamed veins and arteries at biopsy or at amputation of extremities in thirty-four cases of thrombo-angiitis obliterans. Gram-positive, pleomorphic streptococci were obtained in pure culture in nine cases and green-producing streptococci in two. Cultures were taken in a similar manner of arteries and veins from ten amputated extremities of patients with arteriosclerosis, and five cultures yielded gram-positive, pleomorphic streptococci. Cultures from normal arteries and veins of twenty-four other patients were negative. Four different methods were used in attempting to reproduce thrombo-angiitis obliterans in experimental animals: 1. Pleomorphic streptococci were injected intravenously into thirteen rabbits. Intimal proliferation with thrombosis took place in two. Thirty-one rabbits were given injections in a similar manner with organisms obtained from extracted teeth, tonsils, the nasopharynx and secretions of the prostate. Negative results were obtained. 2. Pleomorphic streptococci were injected into the femoral muscles, adjacent to the femoral vessels, of forty-two rabbits. Intimal proliferation and thrombosis occurred in ten rabbits. 3. Portions of the vessels obtained from patients with thrombo-angiitis obliterans were embedded in positions adjacent to the femoral vessels of twenty-nine rabbits and one dog. Intimal proliferation and thrombosis occurred in seven rabbits, and in one rabbit trophic changes and dry gangrene developed in the toes of the hind feet. 4. Vessels that had been previously shown to contain pleomorphic streptococci were embedded into the pulp cavities of teeth of two dogs, with negative results. The results obtained by injecting organisms at sites adjacent to the femoral vessels of rabbits and those obtained by embedding segments of vessels from human beings in positions adjacent to the femoral vessels were essentially the same (23.8 and 24.1 per cent, respectively, positive). The pathologic lesions found in the vessels of these rabbits appeared to be identical with those seen in human beings with thrombo-angiitis obliterans and represent, so far as the authors are aware, the first lesions of this type that have been produced in experimental animals. The study suggests that thrombo-angiitis obliterans is of infectious origin and that the streptococcus may be of etiologic significance.

Canadian Public Health Journal, Toronto

23: 253-302 (June) 1932

Development of Public Health. W. J. Bell, Toronto.—p. 253.

Milk Sanitation in Canada. R. H. Murray, Regina, Sask.—p. 259.

Approach to Mental Hygiene. J. W. MacNeill, North Battleford, Sask. —p. 267.

Rural Prenatal Program. M. McCuaig.—p. 271.

Some Unusual Cases of Syphilis. H. R. Elliott, Toronto.—p. 275.

Journal of Comparative Neurology, Philadelphia

55: 1-271 (June 15) 1932

Peripheral Nervous System of Earthworms. B. R. Coonfield, Boston. —p. 7.

Hypothalamus of Albino Rat. W. J. S. Krieg, New York.—p. 19.

Rigidity Caused by Pyramidal Lesions in Cat. S. W. Ranson, Chicago. —p. 91.

Neurofibrillar Structure of 7-Mm. Cat Embryo. W. F. Windle, Chicago. —p. 99.

Connections of Auditory Cortex of Cat. F. A. Mettler, Ithaca, N. Y. —p. 139.

Somatic Motor Mechanisms in Midbrain and Medulla Oblongata of Chrysemys Elegans (Wied). H. Tuge, Philadelphia.—p. 185.

Journal of Lab. and Clinical Medicine, St. Louis

17: 843-950 (June) 1932

Technic of Blood Examination. R. L. Haden, Cleveland.—p. 843.

*Value of Accurately Determined Color, Volume and Saturation Indexes in Anemias: Based on Study of Over Two Hundred Patients. E. E. Osgood, H. D. Haskins and F. E. Trotman, Portland, Ore.—p. 859.

Current Views on Origin and Maturation of Cells of Blood. C. A. Doan, Columbus, Ohio.—p. 887.

*Size and Hemoglobin Content of Erythrocyte: Methods of Determination and Clinical Application. M. M. Wintrobe, Baltimore.—p. 899.

Sickle Cell Phenomenon: I. Rate of Sickling in Moist Preparations. L. W. Diggs, Memphis, Tenn.—p. 913.

*Clinical Applications of Supravital Staining. Edna H. Tompkins, Nashville, Tenn.—p. 921.

Hemophilia. C. A. Mills, Cincinnati.—p. 932.

Variations in Diameter of Granulocytes: Preliminary Study. J. W. Love, Cleveland.—p. 942.

Color, Volume and Saturation Indexes in Anemias.—Osgood and his associates review the literature on the color, volume and saturation indexes in anemias. They report detailed results, obtained by methods of research accuracy, for hemoglobin, red cell count, cell volume, color index, volume index, and saturation index in 144 cases of anemia and related conditions. The most characteristic change in pernicious anemia

is the preponderance of macrocytes in the blood. This is most easily recognized by the volume index determination. The high color index in pernicious anemia is due to the increase in size of the cell, not to increased concentration of hemoglobin within the cell. In other words, the saturation index is normal, and true hyperchromia does not occur either in pernicious anemia or in any other condition so far studied. If either the color or the volume index is above 1.25, the patient with rare exceptions will prove to have pernicious anemia. Such a high color and volume index constitutes a definite indication for the administration of liver therapy. A low saturation index strongly suggests that the anemia is due to chronic blood loss and constitutes a definite indication for a search for the cause of the bleeding, an effort to stop the bleeding, and the administration of iron in large doses. Anemia is rare in patients having malignant tumors without bone marrow metastases, hemorrhage or secondary infection; hence the finding of anemia in such patients should suggest that one or more of these complications has occurred. The color, volume and saturation index determinations are extremely valuable aids in the differential diagnosis of anemias. It is necessary to warn, however, that they may be not only of no assistance but actually misleading if they are not determined by an accurate method with controlled technic and if the calculations are not based on correct normal standards now available instead of on the obsolete values still included in most textbooks.

Size and Hemoglobin Content of Erythrocyte.—Wintrobe calls attention to the fact that the differentiation of pernicious and other forms of macrocytic anemia and of anemias characterized by microcytosis and hypochromia from other forms of anemia is not only of academic and diagnostic interest but also essential in the guidance of appropriate treatment. Such differentiation is best made, from the standpoint of simplicity and accuracy, by the calculation of the volume and hemoglobin content of the red corpuscles. These calculations, when combined with the simple examination of the blood smear, yield more information at the expense of much less effort than is entailed in the measurement of the diameter of the red corpuscles. It is possible, on the basis of differences in the size and hemoglobin content of the erythrocyte, to distinguish four types of anemia: 1. Macrocytic anemias, characterized by an increase in the mean volume and hemoglobin content of the erythrocytes and represented chiefly by pernicious anemia and many cases of sprue. 2. Normocytic anemias, which are distinguished by the presence of red cells of normal size and hemoglobin content; this group includes cases of anemia resulting from acute blood loss, hemolytic anemias (malaria), and aplastic anemias. 3. Simple microcytic anemias, which are characterized by a moderate reduction in the size of the red cells with no or little reduction in their hemoglobin concentration; in this group are found the majority of the anemias associated with chronic infections and toxic processes. 4. Hypochromic microcytic anemias; in this type of anemia there may be little or no reduction in the red cell count. Nevertheless the red corpuscles are found to be very small and are poorly filled with hemoglobin. The determination of the size and hemoglobin content of erythrocytes is chiefly important in that it makes possible the ready differentiation of the macrocytic and hypochromic microcytic anemias from the other two types.

Clinical Applications of Supravital Staining.—Tompkins analyzes the conditions in which the specific information obtained from supravital staining is likely to be of help in diagnosis or prognosis. She shows that the method is of value, first, in the differentiation of mononuclear cells of various types, including the young forms of the different strains of white blood cells, and secondly, in showing qualitative differences in any single type of mononuclear cell. In the latter respect the method is particularly helpful in depicting qualitative changes in the lymphocytes and monocytes. Therefore, the method is likely to give assistance in any condition involving the mononuclear cells. This is true whether it is a condition involving the lymphocytes or monocytes or a condition associated with the appearance of young cells. In the case of diseases involving the lymphocytes it has been found that the increases in those cells in certain diseases, such as pertussis, lymphocytic reactions to sepsis, and tuberculosis, are due to cells that are normal in every respect, while other diseases are characterized by the appearance of lymphocytes which stain in the manner of young cells. The infections of childhood, typhoid, malaria and measles are the common conditions in which young lymphocytes may be found. On the other hand, the lymphocytes in infectious mononucleosis are different from either normal or young cells. The lymphocytes of lymphatic leukemia have been shown to exhibit characteristic changes in mitochondria, vacuolar apparatus and nuclei which help to differentiate them from other conditions involving the lymphocytes, as well as from other mononuclear cells. Supravital staining has proved especially valuable in diseases involving the monocytes, because it has not only aided in the detection and differentiation of these cells but has revealed sufficiently characteristic changes in them in a number of pathologic conditions (tuberculosis, undulant fever, malaria, hepatic disturbances, pyogenic infections, and conditions associated with anemia) for the modifications to be of value in diagnosis. The diagnosis of a third type of leukemia, i. e., monocytic leukemia, has been made more certain by supravital blood studies. As a result of these studies it has been possible to differentiate the condition accurately from lymphatic and myelogenous leukemia. In fact, in the leukemias in general, supravital staining with the double stains has proved of tremendous value in the separation of the three main types and in the classification of those types according to their chronicity.

Journal of Nervous and Mental Disease, New York

75: 601-716 (June) 1932

*Active External Hydrocephalus: Report of Three Cases. W. J. Gardner, Cleveland.—p. 601.
Congenital General Pure Analgesia: Case. G. van N. Dearborn, New York.—p. 612.
*Poliomyelitis. I. J. Sands, Brooklyn.—p. 616.
Diplopic and Triplopic Hallucinations in Delirium Tremens. G. Richards, Albany, N. Y.—p. 630.
*Epilepsy and Congenital Syphilis. K. A. Menninger and W. C. Menninger, Topeka, Kan.—p. 632.

Active External Hydrocephalus.—Gardner describes three cases diagnosed as active external hydrocephalus. This diagnosis was made on the basis of the encephalographic observation of marked dilatation of the subarachnoid spaces over the cerebral hemispheres. The activity of the process was indicated by the symptoms of increased intracranial pressure and choking of the optic disks in each case. The total volume of cerebrospinal fluid was found to be markedly increased, but the cause of this increase was not determined. In each case a simple subtemporal decompression was followed by complete recovery.

Poliomyelitis.—According to Sands, the treatment in acute anterior poliomyelitis should be directed toward neutralization of the virus by intravenous and intramuscular administration of serum from convalescent patients as soon as the diagnosis is made; reduction of cerebral edema by administration of hypertonic solutions of dextrose intravenously, and by spinal drainage; combating difficulties in respiration and in deglutition; and protecting the paralyzed muscles by proper mechanical support. The treatment of the paralyses should be directed by properly trained physicians and by competent nurses trained in orthopedic and physical therapeutic principles. Prophylactic measures during an epidemic may be advantageously utilized by segregating the child, and by the administration of immune serum or whole blood intramuscularly. The latter procedure may be repeated every three or four weeks.

Epilepsy and Congenital Syphilis.—The Menningers state that the literature on the relationship of congenital syphilis and epilepsy contains many opinions and statistical studies. The consensus favors the view that congenital syphilis may be a direct or an indirect cause of the epileptic syndrome; some investigators regard their occurrence together as merely coincidental. The authors feel that much of the published work on this problem is based on inadequate diagnostic data. Sometimes a single fixed criterion of syphilis is selected, such as the serum Wassermann reaction or the therapeutic test (in spite of the well known fallibility of both). Sometimes variable tests are used in various cases without uniformity; sometimes the data on which the diagnosis is based are not stated. Too frequently, case histories are not cited. The crux of the problem is the definite diagnosis or exclusion of congenital

syphilis. This the authors do not believe can be done on the basis of the presence or absence of any single symptom or sign or of several fixed and invariable symptoms and signs (including convulsions), but only on the presence or absence of observations in the carefully investigated hereditary, physical and chemical constituents of the individual which, taken in association, point to such a diagnosis. Using such a standard, they selected for presentation thirty-one cases of individuals having convulsions of the "idiopathic epilepsy" type which were regarded as being of congenital syphilitic etiology. It was concluded that congenital syphilis can produce convulsions, directly and indirectly, without the presence of gross brain lesions or encephalitis (juvenile dementia paralytica) and thus appears to be "idiopathic" epilepsy. From a statistical point of view, when compared with the total number of epileptic persons and the total number of persons with congenital syphilis the occurrence of congenital syphilitic epilepsy must be regarded as unusual. The frequency, however, is not so important as the definite establishment of its occurrence.

Journal of Thoracic Surgery, St. Louis

1: 451-572 (June) 1932

*Acute Empyema. G. J. Heuer, New York.—p. 461.
Bronchial Stenosis. L. Eloesser, San Francisco.—p. 485.
*Bronchiectasis. H. Ballon, J. J. Singer and E. A. Graham, St. Louis. —p. 502.
New Portable Pneumothorax Machine. J. J. Singer, St. Louis.—p. 562.

Acute Empyema.—According to Heuer, the respiratory infections that commonly give rise to empyema may roughly be divided into two large groups, pneumonia and influenza. Their clinical manifestations, their pathologic changes and their mortality differ from one another and, in each group, differ from year to year. So, too, do the manifestations of the empyemas that complicate them often differ. In lobar pneumonia the empyema usually follows the disease, appearing after the pneumonic process has subsided; in influenza, it usually appears coincidentally with the pneumonic process. There is therefore a difference in the time of appearance of the empyema with respect to the pneumonic process in the lungs, a circumstance which has an important bearing on the treatment of empyema. The symptoms in the two groups of cases may vary greatly. In empyema following pneumonia they are often comparatively mild. The patient may indeed have a distressing cough, a septic temperature and unpleasant sweats and may lose weight; but in an uncomplicated pneumococcic empyema he may live on for months until he is overcome by mediastinal pressure symptoms or some accident. In empyema following influenza the symptoms are often far more severe; a high grade of toxemia, rapidity of the pulse, urgent respiration and the general appearance of the patient all suggest that he is desperately ill. Indeed, his symptoms seem out of proportion to those one expects from a simple empyema and suggest some additional grave condition; and should he die, as he may early in the disease, necropsy will often reveal a bilateral lobular pneumonia, pericarditis or some equally serious lesion. It is not implied that there is always this striking dissimilarity in the two groups of cases. The postpneumonic empyemas may present the grave symptoms of the postinfluenzal empyemas and at necropsy may show quite similar lesions; again, the postinfluenzal empyemas may present quite as mild symptoms as the postpneumonic empyemas. The question, then, often arises in both groups, whether the severity of the symptoms is due to the empyema alone or to additional complications the result of the respiratory infections.

Bronchiectasis.—In summarizing their discussion on lobectomy for bronchiectasis, Ballon and his associates state that, although improvements in methods of operating have been introduced in recent years, the operation remains even in the best hands one of the most serious procedures in the surgical repertory. From a list of collected operations performed by different operators and by different methods it is hardly fair to draw precise conclusions concerning the operative mortality and the probable chance of a satisfactory result. Yet the fact remains that in 212 collected cases no less than 72 patients (34 per cent) died apparently because of the operation and apparently in only 99 (47 per cent) was a thoroughly satisfactory result obtained. Even if one takes only the more recent and the more favorable figures, one still finds that a patient with bronchiectasis who submits to a lobectomy runs about a 15 to 20 per cent risk of dying because of the operation, and that if he recovers from the operation he has only about a 65 per cent chance of having a thoroughly satisfactory result with solid healing of the wound. In presenting this aspect of the results of lobectomy, the authors point out that there is no intention to be destructive or to argue that the operation is too dangerous or too uncertain in its results to be justifiable. On the contrary, much satisfaction should be gained from the fact that so many patients have been made well; for probably most of those who have obtained satisfactory results have been saved from death due to the natural consequences of the disease, and most of those who have died as a result of the operation would have died if left untreated.

Kansas Medical Society Journal, Topeka

33: 187-228 (June) 1932

President's Message: Importance of Recognizing the Human Element in Medical Organization. P. S. Mitchell, Iola.—p. 187.
Legislation in Interest of Veterans. H. H. Shoulders, Nashville, Tenn. —p. 192.
Study of Defects in Hospital Sterilization Practice. R. E. Lawrence, Lawrence.—p. 200.

Laryngoscope, St. Louis

42: 415-495 (June) 1932

Symposium on Nervous Acusticus: I. Applied Anatomy of Eighth Nerve and Its Environs, the Cerebellopontile Angle. C. B. Courville, Los Angeles.—p. 415.
Id.: II. Pathologic Conditions Involving Eighth Nerve and the Cerebellopontile Angle. N. Evans and C. B. Courville, Los Angeles.—p. 432.
Id.: III. Pathologic Anatomy of Its Neoplasms. L. J. Adelstein, Los Angeles.—p. 456.
Id.: IV. Histopathology of Eighth Nerve. E. M. Hall, Los Angeles. —p. 462.
Id.: V. Eighth Nerve: Symptomatology from Standpoint of Neurology. S. D. Ingham, Los Angeles.—p. 482.
Id.: VI. Vestibular Symptomatology. E. R. Lewis, Los Angeles.—p. 485.
Id.: VII. Eighth Nerve Symptomatology from Standpoint of Neurosurgery. C. W. Rand, Los Angeles.—p. 491.

Maine Medical Journal, Portland

23: 121-134 (June) 1932

Treatment of Deafness. F. T. Hill, Waterville.—p. 126.

Medical Bull. of Veterans' Adm., Washington, D. C.

8: 431-517 (June) 1932

Phrenic Exeresis. A. G. Walker.—p. 431.
Nontuberculous Lung Diseases: Report of Three Cases: Coccidiosis, Actinomycosis, Carcinoma. H. B. Williams.—p. 435.
Consideration of Some Factors in Early Hypertension. T. Ziskin.—p. 442.
*Treatment of Dementia Paralytica with Inoculation Malaria. O. P. Goodwin.—p. 449.
Malaria Treatment of General Paralysis. R. L. Harris.—p. 454.
*Low Back Pain (Lumbar Spine). H. L. Wheeler.—p. 458.
Studies of Venous Pressure: Their Clinical Application. L. H. Criep. —p. 463.
Nitrous Oxide-Oxygen Anesthesia. P. D. Moore.—p. 469.
The Forssman or Heterophile Antigen. E. W. Lazell.—p. 477.
Dental Focal Infection. R. J. Hamilton.—p. 486.

Treatment of Dementia Paralytica with Inoculation Malaria.—Goodwin points out that secondary anemia sometimes follows inoculation malaria, and it is essential that complete blood counts be made twice weekly and oftener if deemed necessary. Dementia paralytica is more frequent in white persons but runs a more rapid course in Negroes. Life expectancy is increased by malarial therapy of dementia paralytica patients regardless of whether there is a complete remission in their condition. Quinine is definitely contraindicated when the red blood cell count is below 2,000,000 and the hemoglobin below 40. Patients with temperatures around 105 F. show the greatest amount of improvement. The results of inoculation malaria depend on the amount of parenchymatous degeneration present.

Low Back Pain.—According to Wheeler, one of the most difficult problems that confront the medical examiner in his endeavor to evaluate orthopedic disabilities is that of "lumbar spine" or low back pain. This pain may be due to a host of different causes, and it should be the aim of the examiner to determine the exact cause and govern himself accordingly. However, this is not an easy matter. In some instances the

diagnosis is simple, but the exact classification of the symptoms many times constitutes quite a problem. Especially is this true in cases of an industrial nature or when rehabilitation is sought and disability compensation enters into the problem. The fact that lumbar pain presents a certain difficulty to the examiner is often known by the patient, and consequently it is most difficult to trip up a malingerer who presents himself complaining of pain in the lower portion of the back.

Military Surgeon, Washington, D. C.

70: 529-656 (June) 1932

Care of Gas Casualties. C. C. Hillman.—p. 529.
Dietetic Management in Military Hospitals: Its Perplexities and Responsibilities. H. C. Michie.—p. 550.
New Bactericide for Treating Anterior Gonorrhea. J. S. Diasio.—p. 594.
Trip to Culion Leper Colony. S. F. Seeley.—p. 597.

New England Journal of Medicine, Boston

206: 1231-1280 (June 16) 1932

Cirrhosis of Liver. F. B. Mallory, Boston.—p. 1231.
Operative Mortality in Goiter. H. M. Clute, Boston.—p. 1240.
*Reasons for Unsatisfactory Results in Treatment of Calculi of Upper Urinary Tract. E. L. Peirson, Jr., Salem, Mass.—p. 1243.
New Method of Treating Indirect Sac in Inguinal Herniorrhaphy. E. M. Hodgkins, Boston.—p. 1249.
Small Milk-Borne Outbreak of Septic Sore Throat. R. E. Archibald, Lynn, Mass., and R. F. Feemster, Boston.—p. 1252.
Causation and Propagation of Heart Beat. W. D. Reid, Boston.—p. 1254.
Retroperitoneal Perirenal Lipoma. L. Wechsler, Pittsburgh.—p. 1259.
Fracture of Capitellum. F. S. Hopkins, Springfield, Mass.—p. 1261.
Removal of Separated Upper Epiphysis of Radius. F. H. Baehr and L. E. Hathaway, Jr., Springfield, Mass.—p. 1263.

Treatment of Calculi of Urinary Tract.—In an analysis of the cases of ureteral and renal calculi at the Massachusetts General Hospital over a ten-year period, Peirson found that the results obtained in the treatment of these cases are not so good as should be expected. Further analysis of these cases shows that the greatest cause of failure is due to delay in performing the operation. It seems desirable that the public and the medical profession realize more clearly the seriousness of urinary calculi. The author believes that every patient who is suspected of having a urinary calculus should have both a complete urinalysis and roentgen examination. If a stone is discovered, cystoscopy should be performed and the patient carefully followed until the stone has been removed. If attempts are made to remove the stone by nonoperative measures the case must be carefully followed from every angle and operation performed on the first appearance of signs of infection or increasing kidney damage. Expectant treatment can be safely carried out only after a complete urologic examination and in cases in which the patient will be continually under rigid medical observation.

Northwest Medicine, Seattle

31: 263-312 (June) 1932

Our Futile Intelligence. G. C. Schauffler, Portland, Ore.—p. 263.
What the County Medical Society Can Do for Its Members. C. E. Hunt, Eugene, Ore.—p. 267.
What Is Socialized Medicine? A. H. Peacock, Seattle.—p. 270.
Relative Value of Medical Magazines. K. K. Sherwood, Redmond, Wash.—p. 273.
Irritable Colon: Deficiency Disease. J. C. Brougher, Vancouver, Wash.—p. 277.
Shadow-Box Colitis. B. R. Brooke and W. Dixon, Portland, Ore.—p. 281.
The Great Omentum and Omental Thrombosis. A. H. Johnson, Portland, Ore.—p. 285.
Suppurative Pericarditis: Surgical Consideration with Case Report. W. H. Bueermann, Portland, Ore.—p. 290.
Postoperative Parathyroid Tetany. E. A. Nixon, Seattle.—p. 297.
Pseudopellagra? Resulting from Certain Dietary Deficiencies. L. B. Kingery, Portland, Ore.—p. 300.
Pellagra: Case Report. J. C. Hathaway, Spokane, Wash.—p. 302.

Oklahoma State Medical Assn. Journal, Muskogee

25: 221-276 (June) 1932

Duty of the Physician to His Profession. R. M. Anderson, Shawnee.—p. 221.
Some Preliminary Observations of "Bacteriophage." A. L. Guthrie, Oklahoma City.—p. 224.
Immunization Against Diphtheria with Toxoid in Private Practice. C. E. Bradley, Tulsa.—p. 227.
Some Recent High Points in Surgical Progress. F. S. Watson, Okmulgee.—p. 230.
Anterior Pituitary. H. H. Turner, Oklahoma City.—p. 232.
Postgraduate Medical Course in Otology. L. W. Kibler, Norman.—p. 236.

Pennsylvania Medical Journal, Harrisburgh

35: 605-684 (June) 1932

Symposium on Allergy: Hay Fever and Its Complications. A. M. Peters, Allentown.—p. 605.
Id.: Nasal Pathology Associated with Bronchial Asthma. A. T. Smith, Philadelphia.—p. 607.
Id.: Asthma and Other Clinical Allergies. J. A. Clarke, Philadelphia.—p. 609.
Erysipelas in Infancy and Childhood. E. L. Bauer, Philadelphia.—p. 613.
Evaluation of Electrocoagulation of Tonsils. C. W. Beals, Du Bois.—p. 615.
Status Lymphaticus: Its Relation to Thymus and Adrenal Glands. E. H. Campbell, Philadelphia.—p. 620.
Preoperative and Postoperative Treatment of Surgical Diseases of Kidney from Medical Standpoint. D. Riesman, Philadelphia.—p. 624.
Symposium on Kidney: Tumors of Kidney. B. L. Crawford, Philadelphia.—p. 629.
Id.: Treatment of Pyelitis (Pyelonephritis). R. L. Anderson, Pittsburgh.—p. 630.
Fothergill Operation: Standardized Procedure for Correction of Genital Prolapse. F. H. Maier and W. J. Thudium, Philadelphia.—p. 640.

Public Health Reports, Washington, D. C.

47: 1285-1328 (June 10) 1932

Duration of Viability and Virulence of Bacillus Pestis. E. Francis.—p. 1287.

South Carolina Medical Assn. Journal, Greenville

28: 123-151 (May) 1932

President's Address. C. A. Mobley, Orangeburg.—p. 128.
Artificial Pneumothorax. C. W. Evatt, Greenville.—p. 130.
Rectal Diseases from Standpoint of General Practitioner. H. B. Stone, Baltimore.—p. 132.

Tennessee State Medical Assn. Journal, Nashville

25: 207-250 (June) 1932

"Sprue." J. W. McElroy, Memphis.—p. 207.
Surgical Treatment of Arterial Aneurysm. B. Brooks, Nashville.—p. 215.
Hazards of Surgery in Obstetrics. P. W. Toombs, Memphis.—p. 220.
Electrical Injuries. J. A. McCulloch, Maryville.—p. 225.
Cancer of Orbit. J. W. Danley, Lawrenceburg.—p. 229.
Cancer of Larynx: Report of Case, with Lantern Slides. H. W. Qualls, Memphis.—p. 232.
Improvements in Anesthetic Complex, with Especial Reference to Local Anesthesia in Bone Surgery. E. T. Newell, Chattanooga.—p. 236.

Wisconsin Medical Journal, Madison

31: 430-499 (July) 1932

The Small Town Physician in General Practice and His Relationship to the Medical Profession. J. H. Karsten, Horicon.—p. 439.
*The Anemias of Adolescence: Clinical Diagnosis, Pathology and Treatment. H. R. Fehland, Wausau.—p. 442.
Purpura Hemorrhagica. E. L. Mason, Eau Claire.—p. 447.
Inefficacy of Present Day Treatment of Pernicious Anemia. H. V. Kamp, Chadron, Neb.—p. 451.
Cardiac Irregularities. K. H. Doege, Marshfield.—p. 453.
History in Diagnosis of Pulmonary Tuberculosis. O. Lotz, Milwaukee.—p. 458.

The Anemias of Adolescence.—According to Fehland, the problem of the anemias of adolescence is closely interwoven with that of the spleen. The clinical phenomena may not always readily reveal this relationship, but in a great many instances it is the pathologic spleen which serves as the underlying cause of a severe anemia. Since the spleen is a part of the reticuloendothelial system to which also belong the other lymphoid tissues of the body, it follows that the spleen reaches the height of its activity during adolescence and therefore also appears to be more subject to pathologic processes during this period. The most common disease process is that which functionally produces a work hypertrophy and is usually associated with anatomic hypertrophy as well. The result of such changes is commonly an increase in the normal physiologic function of destroying formed blood elements, whether these are red blood cells, as in hemolytic icterus, in which these cells are abnormally fragile, or white blood cells, as in early Banti's disease and Gaucher's disease, or even platelets, as in purpura hemorrhagica. At other times the pathologic spleen resumes certain fetal characteristics in the production of embryonic white blood cells, bringing about the clinical syndrome known as myelogenous leukemia. In all these conditions there obtains a fundamentally malfunctioning spleen, and the ultimate clinical phenomenon is that of an anemia. Splenectomy, when indicated and when preceded by proper preoperative care, offers the best results with low surgical mortality.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. of Dermatology and Syphilis, London

44: 297-356 (June) 1932

*New Phase in Early Syphilis. J. A. Drake and M. S. Thomson.—p. 297.
Some Points in Connection with Meinicke (M. K. R.) Test. J. E. Nicole.—p. 305.
Physiology of Superficial Blood Vessels in Psoriasis. W. G. C. Paterson.—p. 310.

New Phase in Early Syphilis.—Drake and Thomson call attention to the fact that during the past decade many "arsenic-resistant" cases of syphilis have been described. These comprise individuals with resistant Wassermann reactions, patients in whom the original primary and secondary lesions have been highly persistent, and cases in which a partial involution of the early eruption has preceded an exacerbation of the same rash while the patients were still under treatment. But few have shown the strikingly rapid progression illustrated by a series of ten selected cases reported by the authors. On the whole, opinion seems to favor an obscure lack of response on the part of the individual. The fault cannot lie with the arsenic or any particular preparation of it because the majority of cases of early syphilis still progress satisfactorily to a cure, and unfavorable results have been reported with different preparations. The evidence as a whole points to the possibility that a more resistant strain of spirochete is beginning to make its appearance.

British Journal of Ophthalmology, London

16: 321-384 (June) 1932

*Clinical Significance of Ocular Musculature, with Especial Reference to Intra-Ocular Pressure and Circulation of Intra-Ocular Fluid. W. S. Duke-Elder and P. M. Duke-Elder.—p. 321.
Sir William Read's Treatise of Eyes. A. Sorsby.—p. 335.
Late Sixteenth Century Ophthalmic Book in English. A. Sorsby.—p. 345.
Optic Atrophy After Injections of Arsenic. T. H. Butler.—p. 356.
Retinal Detachment Occurring Probably After Herpes Zoster Ophthalmicus in Case of Simple Glaucoma. A. A. B. Scott.—p. 358.
William Briggs, M.D. (1650-1704). R. R. James.—p. 360.

Clinical Significance of Ocular Musculature.—The Duke-Elders point out that the diurnal pressure curve in the normal eye is a well known physiologic phenomenon. The pressure varies throughout the day by some 2 to 3 mm. of mercury; it is highest in the early morning before the patient commences the day's activities; after he gets up it falls, at first rapidly and then more slowly, until the evening when he retires to rest. Through the night in bed the reverse occurs: a rise occurs, again in two stages—a slow and gradual rise during the first few hours, and then a more rapid rise in the early morning. This is almost certainly due to the influence of the pressure-circulation: the absence of muscular activity during the night allows the pressure to rise, and the commencement of movements in the morning immediately lowers it. It is significant that in most cases of chronic glaucoma the diurnal variation is greatly exaggerated; and in case of doubtfully raised tension it is a wise procedure to take the tension of the eye while the patient is still in bed and before the activities of the day are commenced. The authors also call attention to the fact that the marked influence of the extra-ocular muscles on the intra-ocular pressure demonstrates the necessity for adequate akinesia in all intra-ocular operations. When it is remembered that a relatively mild contraction of the orbicularis raises the intra-ocular pressure from 27 to 53 mm. of mercury, the danger of loss of vitreous in a cataract extraction is obvious unless this muscle is thrown out of action. It follows that in all such operations the orbicularis should be paralyzed, either by injection of the facial nerve as it crosses the ramus of the mandible or by a local injection around the orbit; the former method is the one of greater precision, the latter the one of greater ease and certainty. Further, the action of looking down raises the pressure of the eye by the contraction of the recti, a rise which becomes quite marked if the action is forced. If every precaution is to be taken, a retrobulbar injection of procaine hydrochloride should be employed. This should be employed as a very dilute (0.25 or 0.5 per cent) solution injected immediately before one commences the operation, so that the muscles are not wholly paralyzed but merely weakened.

British Journal of Urology, London

4: 105-108 (June) 1932

*Transurethral Prostatic Resection. H. C. Bumpus, Jr.—p. 105.
Vesico-Intestinal Fistula. J. F. Dobson and P. J. Moir.—p. 122.
Ureterocele. J. Carver.—p. 132.
System for Permanent Filing of Cases of Genito-Urinary Diseases According to Diagnosis. H. P. Winsbury-White.—p. 139.

Transurethral Prostatic Resection.—Bumpus states that for transurethral prostatic resection the most satisfactory enlargement is that due to benign adenomatous hypertrophy of the gland. Healing is usually rapid even in cases in which considerable tissue is removed. The amount of tissue removed to relieve the obstruction will, of course, be greatest in this group. The next most satisfactory cases are the adenocarcinomas. After removal of obstructing tissue, recurrence is not so rapid as one might expect. The author has a specimen of a bladder removed at necropsy several years after resection in which the urethra was still free of obstruction, although the patient died with extensive metastasis to the viscera as well as to the skeleton. The mucous membrane was intact over the excised area in the specimen. The patient remained free of residual urine to the time of his death and was saved many years of catheter life by the procedure. Of course, the majority of patients die as a result of the disease before there is time for recurrence of the obstruction, but the resection was repeated in one case five years after the initial operation with relief of symptoms. The pathologist reported that the tissue from both operations was highly malignant. When the obstruction is due to prostatitis and only inflammatory tissue is excised at the time of resection, the results are prone to be disappointing. Such patients should not be subjected to resection until every effort has been exhausted to correct the prostatitis by other methods. When such methods have failed and residual urine persists, resection of the obstructing portion of the gland is justified. If the precaution of previous treatment by massage and irrigation is not followed, a stormy reaction may occur following operation, as to resect prostatic tissue in the presence of active infection is needlessly to court disaster. In such cases the author insists on local treatment until the prostatic infection appears as quiescent as can be hoped for. He also places the patient on a ketogenic diet, which renders the urine highly bactericidal in the majority of cases. If these precautions are taken, resection can be performed and may frequently break up the vicious cycle of prostatitis producing residual urine and the residual urine acting as an irritant to the prostatitis.

British Medical Journal, London

1: 1017-1062 (June 4) 1932

Liver and Spleen: Their Clinical and Pathologic Associations. J. W. McNee.—p. 1017.
*Clinical Comparison of Ergotoxine and Ergotamine: Report to the Therapeutic Trials Committee of the Medical Research Council. C. Moir.—p. 1022.
*Menace of Obesity. E. Bulmer.—p. 1024.
*Symptomatic End-Results of Operations for Cholecystitis: Review of One Hundred and Fifty-Three Cases. J. C. Ross.—p. 1026.

Comparison of Ergotoxine and Ergotamine.—Moir describes a method by which the response of the human puerperal uterus to oxytocic drugs may be directly recorded. By the use of this method in a series of puerperal patients he demonstrated that both ergotoxine and ergotamine bring about strong contractions in the puerperal uterus when they are administered by injection. Ergotoxine and ergotamine are indistinguishable from each other in their action on the puerperal uterus. The effect comes on slowly and takes from fifteen to forty-five minutes to appear after intramuscular injection. The most suitable dose for intramuscular injection is 0.5 mg. Oral administration gives slow and erratic results, even after comparatively large doses of the drug.

Menace of Obesity.—According to Bulmer, overweight after the age of 35 years increases the general mortality. The cause of obesity is usually increased carbohydrate diet. Treatment is simple and dietetic. Obesity and hyperpiesia are associated. Diabetes is probably a penalty of obesity in the majority of cases. Degenerative disease of a fatal nature in the heart, arteries, kidneys and liver are two and a fourth times commoner in the obese than in persons of standard

weight, and three and three-fifths times commoner than in those underweight. Chronic cholecystitis and gallstones are much more frequent in the obese.

End-Results of Operations for Cholecystitis.—From a study of the symptomatic and end-results of operations in 153 cases of cholecystitis, Ross concludes that complete cure may be expected in 82.4 per cent. Of the rest, 10.5 per cent are relieved, while 7.01 per cent remain in statu quo. The symptoms of flatulent dyspepsia, including qualitative anorexia, completely disappear in more than 80 per cent of cases. It would appear that the absence of stones renders the prospect of cure perceptibly less. However, in cases of acute cholecystitis the absence of stones has no effect whatever on the prospect of cure. The operative mortality varies between 2 and 6 per cent, depending to a large extent on the type of case dealt with. In the author's series, dealing with every type of case, the mortality was 5.8 per cent. The average period of convalescence before full work is resumed is thirteen weeks.

Journal of State Medicine, London

40: 311-372 (June) 1932

Control of Industrial Rheumatism. W. S. C. Copeman.—p. 311.
*Classification of Dysentery Bacilli. A. Castellani.—p. 324.
Prevention of Chest Troubles in Children. A. Moncrieff.—p. 336.
Silicosis and the Industrialist. R. Ballantyne.—p. 342.
Public Health Service of the Future Metropolis Considered in Relation to Replanning of Local Government Areas of London and Greater London. F. S. Hill.—p. 350.

Classification of Dysentery Bacilli.—Castellani states that, from the standpoint of the practical clinical bacteriologist, dysentery bacilli sensu lato may be conveniently separated, as suggested by him, as follows: 1. Dysentery bacilli sensu stricto (Bacillus dysenteriae Shiga-Kruse) do not clot milk, do not acidify mannitol. 2. Paradysentery bacilli (Bacillus paradysenteriae variety Flexneri; variety Hissi-Russelli) do not acidify lactose, do not clot milk, acidify mannitol. 3. Metadysentery bacilli acidify lactose, usually clot milk. A somewhat similar nomenclature may be used to indicate the various types of bacterial dysenteries: (1) bacterial dysentery, sensu stricto, due to Bacillus dysenteriae Shiga-Kruse (Eberthus dysenteriae Shiga-Kruse); (2) paradysentery, due to the different varieties of Bacillus paradysenteriae Collins (Eberthus paradysenteriae Collins, with its varieties Flexneri, Hissi-Russelli) and (3) metadysentery, due to the metadysentery bacilli (bacilli of the genus Castellanus Cerruti). From the point of view of the systemist the first two groups of bacteria (dysentery and paradysentery) belong to the genus Eberthus, subgenus Shigella, the third group to Cerruti's genus Castellanus.

Journal of Tropical Medicine and Hygiene, London

35: 162-176 (June 1) 1932

Serologic Studies on Bacillus Morgan No. 1 (Salmonella Morgani Cast. and Chalm.). A. Castellani.—p. 162.
Chemical Nature of Pellagra Toxin and Discovery of Thiosulphate Treatment of Pellagra. I. Sabry.—p. 164.

Lancet, London

1: 1239-1292 (June 11) 1932

*Obstetric Forceps and Its Use. Mabel Dobbin Crawford.—p. 1239.
*Present Position of Prostatectomy. H. Cabot.—p. 1243.
Endo-Urethral Treatment of Enlarged Prostate. J. F. McCarthy.—p. 1246.
*Focal Sepsis as Cause of Nephritis. A. C. Alport.—p. 1247.
*Menopausal Age and Mammary Carcinoma. E. K. Dawson.—p. 1251.

Use of Obstetric Forceps.—According to Crawford, the rules for the application of forceps are four. 1. Forceps may be applied only during the second stage of labor—that is, when the cervix is fully dilated and taken up. In rare instances, in which every other condition is favorable and delivery urgent, it may be permissible to incise a thin margin of cervix, but it is never justifiable to drag a fetus through a partially dilated os; the resulting lacerations may cause the mother's death or turn her into a chronic invalid. 2. The second rule is that the head must be fixed and the largest presenting diameter must have passed through the pelvic brim. Forceps, ideally, constitute an instrument for lifting the fetal head over the perineum. They may be applied on occasion to the head in the middle strait that is fixed, the largest diameter through the brim but not yet descended to the perineum. The application of forceps is a success only when their use leaves the mother no worse off than she was before their application, and when the child is born alive. If the maternal efforts fail to mold the fetal head through the pelvic brim, the dragging through of that head by means of forceps is as certain to kill the child as a craniotomy and is far more liable to injure the mother. Choice must rest between correction of malpresentation, cesarean section or craniotomy or, perhaps, pubiotomy. 3. The presentation must be favorable, vertex with the occiput anterior. Occasionally the use of forceps is permissible in face presentation in which the chin is to the front; in brow, when the whole head has passed into a roomy pelvis; or, rarely, in a vertex presentation with the occiput posterior. 4. The membranes must have been ruptured.

Present Position of Transurethral Prostatectomy.—Cabot states that transurethral prostatectomy is most obviously suited to patients with small glandular hypertrophies and in general to the smaller types of obstruction. He is still doubtful whether the operation can be satisfactorily applied to patients with great enlargement of the commissural subcervical glandular structures, in general the group commonly referred to as median lobe enlargement. Some of these enlargements reach great size and project backward, entirely covering the trigon and in some cases are more or less pedunculated. For this group he has hesitated to advise transurethral prostatectomy, though he is aware that it has been successfully employed in such cases. For the present at least he would prefer for these patients the suprapubic method of attack. He is also hesitant in regard to patients with large lateral lobes which have herniated backward through the vesical sphincter and come to lie in an obstructing position in the median line. The transurethral approach seems to him considerably handicapped in dealing with this group. Here suprapubic prostatectomy is at its best and he thinks further experience, at least, is required before admitting that the lesser procedure will produce wholly satisfactory results. For the moderate enlargements such as would be classified as one and two on a scale of four, the transurethral attack is well suited and has demonstrated satisfactory results. At the present time at the Mayo Clinic something like half of the cases of prostatic obstruction appear wholly suited to this method, and the proportion that is regarded as suitable has steadily increased during the last two years.

Focal Sepsis as Cause of Nephritis.—Alport shows that in the vast majority of cases of nephritis of various types it is possible to demonstrate well marked infection of the tonsils, antrums, teeth, and so on; this is particularly the case in subacute nephritis with much edema, and it is in these patients too that early removal of focal sepsis appears to give the best results. If the kidneys are badly damaged by the long continued excretion of a more or less virulent toxin, a surgical operation, by removing the source of the latter, may tend to slow down the progress of the disease; but the best results are obtained when the tonsillar or other infection has been searched for and eradicated at an early stage. In the chronic cases of nephritis with high blood pressure (200 mm. of mercury or more) even if infection is discovered, it is questionable whether the benefit obtained is sufficient to justify the risk of surgical intervention. The author suggests that specialist examination of the tonsils and antrums be undertaken at the earliest moment in all cases of pregnancy in which albumin in the urine or other signs of nephritis appear; also in postscarlatina, diphtheria, and other conditions in which residual tonsillar or associated infections tend to occur. Moreover, if focal sepsis is discovered it should be removed at once, as a precaution against the possibility of subacute or chronic nephritis later.

Menopausal Age and Mammary Carcinoma.—Dawson makes a survey of the duration of the menopause and sets up in parallel the frequency distributions of the menopause and the age incidence of cancer of the breast. He concludes from his figures that: 1. The age distribution of the menopause, as shown in his series of cases, has a longer range (from 30 to 59 years) and frequency than is commonly allowed. 2.

The figures representing the age distributions of the menopause and the incidence of cancer of the breast are not inconsistent with the hypothesis, suggested also by other considerations, that a correlation exists.

1: 1293-1344 (June 18) 1932

*Reactions of Eye to General Disease. F. A. Williamson-Noble.—p. 1293.
*Bacillus Coli Meningitis in the New-Born. J. Gibbens.—p. 1298.
Tetanus Caused by Toy Pistol Wounds. Gwendoline Smith.—p. 1301.
Streptococcal Septicemia Complicating Epidemic Influenza. R. E. Smith.—p. 1303.

Reactions of Eye to General Disease.—Williamson-Noble points out that it is not probably realized what an intimate relationship measles has to the onset of convergent squint in children. The number of cases of squint which date from an attack of measles is large, and the reason for it is probably as follows: Nonparalytic convergent squint unassociated with disease of the retina or optic nerve is due in the ultimate analysis to failure of the fusion center to correlate the movements of the two eyes. Most of these cases occur in persons with hypermetropia and, if the hypermetropia is not corrected with glasses, clear vision can be obtained only by accommodation. The synergic action of convergence tends to occur at the same time and, if the fusion power is weak, little or no diplopia is caused and one eye becomes turned in. Binocular vision is a relatively late phylogenic acquisition and is therefore a function that is easily upset. An analogy with this is to be found in the action of anesthetics on the central nervous system, in which the highest centers are those to be first affected. The toxin of measles seems in a fair number of cases to have some peculiar selective action on the fusion center in the brain, and to bring about concomitant convergent squint, apart entirely from anything in the way of encephalitis. An uncommon sequel of measles is a degenerative change in the macular region of the retina which brings about marked diminution of visual acuity. Here again the phylogenic theory may come in, since macular vision is a relatively late acquisition. The author also points out that, although the Argyll Robertson pupil is in a high percentage of cases due to neurosyphilis, it is not necessarily pathognomonic of this disease. He mentions other diseases in which it occurs. Foremost is epidemic encephalitis, a disease that is particularly interesting, since some cases of it show the reversed Argyll Robertson phenomenon—i. e., reaction to light and none to accommodation convergence. Secondly, it has been found in cases of multiple sclerosis, and in syringomyelia and syringobulbia, while chronic alcoholism has been known to produce it. Most interesting of all, however, from the pathologic standpoint are the cases of cerebral tumor which are associated with an Argyll Robertson pupil. A sufficient number of cases would now seem to have been published to establish the truth of the observation that tumors in the region of the third ventricle, aqueduct or anterior corpora quadrigemina may give rise to this type of pupil reaction. In particular, injury of the anterior corpora quadrigemina appears to cause it.

Bacillus Coli Meningitis in the New-Born.—Gibbens reports that, in postmortem examinations on new-born infants during the last year or so at Queen Charlotte's Hospital, three cases of meningitis due to Bacillus coli have been seen. In only one of these was the diagnosis made during life; the other two were thought to be cases of intracranial hemorrhage. In one of the cases, Bacillus coli was recovered in pure culture from purulent cerebrospinal fluid during life; in the other two cases, examinations were made shortly after death, and not only did cultures yield the organism, but it was found in direct smears of the pus.

Medical Journal of Australia, Sidney

1: 711-754 (May 21) 1932

Some Historical Aspects of Smallpox. F. S. Hone.—p. 711.
*Serum Treatment of Experimental Streptococcal Infection. W. J. Penfold and Hildred M. Butler.—p. 717.
Note on Preparation of Intravenous Solutions. E. L. Cooper and A. J. B. Haldane.—p. 736.
Modern Treatment as Applied to Postoperative Pulmonary Complications and Accidents of the Beach. H. S. Stacy.—p. 737.

Serum Treatment of Experimental Streptococcal Infection.—Penfold and Butler tried two simple technics for the discovery of the antistreptococcal serum that might be expected to benefit individual patients infected with particular strains of streptococci. The technic consists, in one case, in the therapeutic use of various serums to protect mice against the experimental infection with the strain isolated from the patient and, in the second case, in the prophylactic use of serum for the same purpose. With both these methods it was found that, first, the infected mice may be unaffected by the exhibition of the serum; secondly, they may in a few cases be benefited by the serum; or, thirdly, they may be definitely injured by it. The treated animals may die much more quickly than the untreated. On the basis of their observations the authors conclude that commercial streptococcal serums are not infrequently dangerous when they are used to treat experimental streptococcal infections of mice. This dangerous effect may possibly be exerted in man. At present the authors feel it unwise to recommend streptococcal serum treatment in acute streptococcal infections in the human subject.

Practitioner, London

128: 569-660 (June) 1932

Indications for Exploration of Abdomen. Z. Cope.—p. 569.
Dercum's Disease: Case. G. R. Murray.—p. 576.
The Inoperable Prostate. K. Walker.—p. 582.
Retention of Urine and Its Treatment. T. E. Hammond.—p. 592.
Some Observations on Diagnosis and Prognosis of Pulmonary Tuberculosis. R. R. Trail.—p. 607.
Chronic Ulcers of Legs. A. D. Wright.—p. 618.
Further Observations on Electrophonoid Treatment of Deafness. M. Yearsley.—p. 631.
Deficient Arterial Tone: Factor in Postinfluenzal Heart Weakness. T. S. Wilson.—p. 640.
Some Common Emotional Disorders. T. A. Hawkesworth.—p. 643.

South African Medical Assn. Journal, Cape Town

6: 321-356 (May 28) 1932

Blackwater Fever and Its Relation to Malaria. B. F. Sampson.—p. 323.
Obstetrics Among South African Natives. L. Marchand.—p. 329.
Gynecology in General Practice. T. Radloff.—p. 330.
Eclampsia in Cape Town. E. C. Crichton.—p. 332.
Treatment of Simple Hepatic Enlargement. A. M. Ramsay.—p. 334.

Tubercle, London

13: 385-432 (June) 1932

Influence of Gold Salts on Hemogram in Pulmonary Tuberculosis: Method of Blood Assessment. L. E. Houghton.—p. 385.
Rapid Estimation of Gold Excretion of Patients Under Sanocrysin Treatment. W. S. Stanbury.—p. 396.
Public Health Aspects of Collapse Therapy. A. J. Hruby.—p. 401.

Chinese Medical Journal, Shanghai

46: 449-554 (May) 1932

*Blood Sugar in Arsphenamine Dermatitis. Jui-Wu Mu.—p. 449.
Sacrococcygeal Chordoma: Report of Case. H. C. Pai.—p. 456.
Acute Pericardial Effusion Simulating Hepatic Abscess. A. H. Skinner and K. Gillison.—p. 465.
*Rupture of Uterus During Pregnancy Before Onset of Labor: Report of Case. S. Y. Shen.—p. 473.
Simple Method of Staining Protozoa in Fecal Films. Mary N. Andrews.—p. 476.
Ambergris: Translation and Notes from Old Chinese Literature. B. E. Read.—p. 478.
Self Survey by Mission Hospitals in China. W. G. Lennox.—p. 484.

Blood Sugar in Arsphenamine Dermatitis.—Mu tested the sugar tolerance in nine cases of arsphenamine dermatitis. The dermatitis consisted of erythrodermia and papular, papulovesicular and purpuric exfoliative eruptions. The duration of the dermatitis varied from two to fourteen days. Eight patients showed delayed blood sugar curves and, in addition, four revealed a high fasting blood sugar content. One patient had diabetes. The blood sugar changes could be related to the extent and degree of the dermatitis but not to the type and duration of the eruption. The author suggests that the cause of the blood sugar changes is primarily associated with impairment of the glycogen metabolism of the liver brought about by a deleterious effect of arsphenamine on this organ. He recognizes, however, that the dermatitis itself may be a contributory factor.

Rupture of Uterus During Pregnancy.—Shen calls attention to the fact that spontaneous rupture of the uterus is one of the extremely rare complications of pregnancy. The most common cause of rupture before the onset of labor is probably that of a weak uterine scar following cesarean section. The other common cause is that of a direct injury to the abdominal wall. A case described by the author would seem to fall into

this second group etiologically. Despite the fact that the patient herself was conscious of no severe discomfort at the time of receiving a blow in the abdomen, it seems that the blow must have been the cause of the rupture.

Archives des Maladies du Cœur, Paris

25: 321-384 (June) 1932

*Two New Clinical Signs of Auricular Tachycardia (Auricular Flutter). C. Laubry, D. Routier and A. van Bogaert.—p. 321.
Auriculoventricular Dissociation by Double Command. E. Géraudel.—p. 339.

New Clinical Signs of Auricular Tachycardia.—Laubry and his associates state that there are two clinical signs which permit diagnosis of auricular flutter. They are: (1) anisosphygmia, or inequality of the pulse, and (2) appearance of a third sound in diastole giving a rhythm of three sounds characterized by a continuous variability. The anisosphygmia is of two types: the periodic or alternating type and the aperiodic or irregular type. The alternating type is frequent in regular and rapid flutter. In irregular anisosphygmia the amplitude of all the pulsations is unequal. Irregular anisosphygmia, well known in complete arrhythmia, is also clearly perceived in slight irregularities which escape auscultation and guides the diagnosis toward auricular flutter. In certain regular flutters an alternating or variable oscillation of the pulse takes on the appearance of irregular anisosphygmia. The rhythm of three variable sounds is composed of two normal sounds, to which is added a third dull sound which gives a sensation of rising to the hand or ear applied at the level of the beating of the apex of the heart against the chest wall. The relation of the superadded sound to the two normal sounds is extremely variable. For the normal rhythm is substituted either a doubling of the first sound or a presystolic or protodiastolic gallop. In long diastoles a fourth dull sound is heard comparable to the one heard in block. This rhythm of three variable sounds is not a characteristic sign of flutter, yet it is of diagnostic value. Although it actually exists independently of auricular activity, the latter contributes in large measure to its production, and its variability is due to the anisochronism, even if slight, of the flutter. From the standpoint of prognosis, the rhythm of three sounds has the same significance as the usual gallop because it is the expression of an abnormal state of the ventricle which frequently results from a myocardial miopragia.

Lyon Chirurgical

29: 401-520 (July-Aug.) 1932

*Rôle of Sympathicus in Pathogenesis of Edema. F. Brandao.—p. 401.
Remote Results of Treatment of Tuberculous Osteoarthritis by Excision of Lesions and Immediate Osteoperiosteal Intra-Articular Graft. R. Leriche and P. Stricker.—p. 421.
Diffuse Ascending Osteitis in Amputation of Thigh for Osteomyelitis. J. Cottalorda and P. Huard.—p. 446.
Case of Human Anthrax Cured by Serum Therapy. L. Bérard and R. Desjacques.—p. 456.

Rôle of Sympathicus in Pathogenesis of Edema.—Brandao reports the case of a woman, aged 25, with severe, painful edema of the left hand and forearm which developed without trauma, inflammation or poisonous bite of an animal and resisted all medical treatment. Periarterial sympathectomy resulted in complete disappearance of the edema in three days, but it reappeared and in eighteen days had attained the same degree as before the operation. Extirpation of the first and second thoracic sympathetic nerve ganglions resulted in rapid disappearance of the edema, but six months later there was another recurrence, this time limited to the hand. The edema receded immediately after extirpation of the remainder of the left cervical sympathetic nerve, including the superior ganglion, and the patient is still well three months after the operation. A similar case of Leriche is cited. The author, in agreement with the majority of investigators, believes that peripheral edema of unknown cause is due to a disturbance of the sympathetic nervous system; but he does not agree with them that the mechanism through which this is brought about is one of vasodilation or vasoconstriction. He thinks that the sympathetic nerve, besides its rôle of vasodilation, acts directly on the vascular endothelium by means of a vasosecretory action capable of making the fluid exchange oscillate. Like Leriche and Fontaine, he admits the existence of two edematogenic reflexes, one short and one long. The edema in his case and Leriche's was the result of morbid exaggeration of the long reflex, suppression of which by surgical intervention made the edema stop immediately. Morbid exaggeration of short reflexes is seen in edemas following phlebitis. In both cases, change of the integrity of the venous wall plays the principal part in the genesis of the disturbances appearing in the extremities. As far as the short reflex is concerned, he thinks there are peripheral centers which suffice to maintain the fluid exchange without any connection with the bulbomedullary centers. The disappearance of the edema after the cervicodorsal gangliosympathectomy in the cases reported demonstrates the possibility of maintaining normal regulation of the lacunar or lymph spaces by action of a mural apparatus left to itself, once the abnormal excitation transmitted to it by the seriously altered long reflex is suppressed. In conclusion, the author states that in his case resection of the entire sympathetic chain was probably unnecessary; division of the branches communicating with the brachial plexus would have sufficed for the treatment of the edema, but the former method was undertaken because it was easier and more certain of success.

Presse Médicale, Paris

40: 1069-1092 (July 9) 1932

General Anesthesia by Rectal Oleo-Etherization. A. Chalier.—p. 1069.
*Myelogenous Leukemia with Relative Polymorphonuclear Neutrophilic Leukocytosis. P. Emile-Weil and G. Sée.—p. 1071.

Myelogenous Leukemia with Relative Polymorphonuclear Neutrophilic Leukocytosis.—Emile-Weil and Sée state that there is a form of myelogenous leukemia with all the clinical characteristics of this disease but differing from the common form by the absence of a variegated leukocytosis and its replacement by a polymorphonuclear neutrophilic leukocytosis. The first of two cases reported concerns a woman with enormous splenomegaly operated on because the case was not diagnosed as leukemia. The spleen was typical of myelogenous leukemia and contained only mononuclear leukocytes, while in the blood with a leukocyte count of 35,000 to 40,000 there were 77 per cent polymorphonuclear leukocytes and only 5 per cent myelocytes; there was a strong normoblastic reaction. Following splenectomy the blood gradually assumed the character of a real leukocytosis and the patient died seven months after intervention. Recognition of this form of myelogenous leukemia is of practical importance to the clinician because of the grave danger incurred by surgical intervention and the extremely beneficial influence of roentgen therapy. This type of leukemia differs from primary splenomegaly in that it is more constantly accompanied by hepatic hypertrophy from the start, the sclerosed organs are firm but not hard, there are fewer functional symptoms, and there is a high polymorphonuclear leukocytosis with myeloid reaction never found in primary splenomegaly in the absence of infection. The authors consider this form of leukemia a preliminary stage of ordinary leukemia. From the theoretical standpoint it shows the existence of a leukemia in which the blood does not reflect the cellular picture of the hematopoietic centers, and the myelocytes, granular or not, are capable of continuing their evolution to their adult form in the blood stream.

Revue Médicale de l'Est, Nancy

60: 425-492 (June 15) 1932

Valgus Flatfoot. M. Froelich.—p. 425.
Minimum Amputation in Lesions of Tarsus. A. Hamant and P. Chalnot.—p. 440.
*Deformation of Bones in Tetanus. Mutel.—p. 458.
*Hypertrophic Stenosis of Pylorus in Nursling. L. Grimault and E. Wilwertz.—p. 464.

Deformation of Bones in Tetanus.—Mutel reports a case of posttetanus sternal deformation characterized by abnormal convexity of the lower portion of the sternum with a lateral flattening of the anterior segment of the ribs resulting in an appearance of marked chicken breast. The patient had retained the attitude of orthotonus, instead of the more frequent opisthotonos, during the illness. The sternal deformation was the result of complex muscular actions; the chest muscles projected the sternum forward, the recti abdomini pulled the xyphoid process forward and the abdominal muscles flattened the ribs laterally. While all tetanus patients present muscular contraction, bony deformation is rare. The intensity of the

muscular contraction and convulsive attacks of tetanus are capable of provoking deformities by attrition of the bony tissue, but only in the presence of a preexisting fragility of the bone tissue. Many explanations have been given by different authors for the origin of this fragility. As almost all the cases reported concern adolescent individuals, the author thinks the predisposing cause may be the malleability of the skeleton at that age, or the condition of bony dystrophy more or less discrete which is designated by the name of late rickets.

Hypertrophic Stenosis of Pylorus in Nursling.—On the basis of personal observations and a study of the literature, Grimault and Wilwertz state that when a nursling who has been previously well suddenly presents disturbances consisting in projectile vomiting, obstinate constipation with rare meconial stools, oliguria and rapid loss of weight without infectious phenomena, one should think of hypertrophic stenosis of the pylorus and make a roentgenologic examination to confirm the diagnosis. Medical treatment, consisting in more frequent and shorter nursing periods and the administration of antiemetics and antispasmodics, should be instituted; if it fails, pylorotomy should be performed immediately. This operation will be followed by immediate and complete cure. The authors report a case of hypertrophic stenosis of the pylorus in a nursling, aged 35 days, which presented all the diagnostic symptoms of this disease except that the pyloric tumor could not be palpated, which is not surprising, as the pylorus in nurslings is sometimes below the liver, even behind the stomach. Roentgenologic examination showed that none of the barium ingested had passed into the intestine in twenty-four hours, thereby confirming the diagnosis. On intervention, a pyloric tumor larger than an olive was found. Pylorotomy was followed by cessation of vomiting and a rapid gain in weight. The authors also report a case of pseudostenosis which resulted from pylorospasm without the existence of a pyloric tumor. The case responded to the dietetic and medical treatment outlined. The response to medical treatment differentiates pylorospasm from stenosis due to a pyloric tumor.

Riforma Medica, Naples

48: 933-972 (June 18) 1932

Concealed Traumatic Illnesses of Locomotor System. H. Burckhardt. —p. 935.
Hyperbilirubinemia Due to Injection of Epinephrine in Tuberculosis. G. Ferrari.—p. 942.
*Spontaneous Fragmentation of Urinary Calculi. A. Paladini.—p. 946.
Can Roentgenographic Investigation of Human Placenta Be Attained? A. Tommaselli.—p. 954.

Spontaneous Fragmentation of Urinary Calculi.—Paladini states that spontaneous fragmentation of urinary calculi rarely occurs. He cites a patient with thirteen entire calculi and 930 fragments. The fragments were generally pyramid-shaped or dome-shaped. Each calculus was divided into large or many small fragments. Chemical investigation revealed that 70 per cent of the entire mass consisted of uric acid without ammonium urate and free carbonic acid with little organic substance. The fragmentation in the author's case continued over a period of years; the bladder contraction of the patient did not in any way determine fragmentation, because the patient had chronic prostatitis with bladder distention and no symptoms of irritation of the bladder. He cites the following theory of Ord as the most satisfactory explanation: The disintegration is due to a liquid filtrating through the strata of the calculus, arriving at the nucleus and causing the swelling of the organic skeleton of the calculus, which in turn causes disruption.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

6: 449-540 (June 30) 1932

Filtrable Forms of Tubercle Bacilli and B C G Vaccine. T. de Sanctis Monaldi.—p. 449.
*Sites of Predilection of Pleural Adhesions. E. Tarantola.—p. 473.
Morphology of Capillaries and Vascular Fragility in Patients with Pulmonary Tuberculosis. A. Corbia.—p. 486.
Clinical Determination of Latent Forms of Tuberculosis in Italian People. A. Muggia.—p. 497.
Tuberculous Meningitis at the Beginning of Pneumothorax Treatment. A. Culotta and A. Cinquemani.—p. 503.
*Serum Coagulation of Weltmann in Pulmonary Tuberculosis in Comparison with Erythrocyte Sedimentation Speed. G. Nannini and B. Davolio Marani.—p. 515.

Sites of Predilection of Pleural Adhesions.—Tarantola states that pleural adhesions occur more frequently on the upper and smaller lobe of the lung and especially at the apex or the posterolateral surface up to the interlobar space. Occasionally the site of the adhesions is at the base of the upper lobe. The lower lobe is rarely a site of adhesions but its superoposterior, upper and diaphragmatic surfaces are sometimes predisposed to them. Adhesions seldom occur on the median lobe. They are frequently found between the leaves of the interlobar pleura. The sites of adhesions are found as a rule on those parts of the lungs presenting tuberculous lesions. The author states that adhesions are often spread by the action of the pneumothorax but that they do not act harmfully on the underlying parenchyma.

Serum Coagulation of Weltmann in Pulmonary Tuberculosis.—Nannini and Davolio Marani present the results of a study of Weltmann's serum coagulation on forty-nine patients with fibrous, mixed and exudative tuberculosis. They use the following technic: To an equal amount of serum (0.1 cc.) they add 5 cc. of a solution of calcium chloride diluted in arithmetical progression from 0.1 per hundred to 0.1 per thousand; for this they prepare ten solutions which contain for 100 cc. of distilled water 1 cc. of calcium chloride at 10 per cent, and then 0.9 cc., 0.8 cc. and so on until they arrive at 0.1 cc., which gives the greatest dilution and corresponds to 0.1 per thousand. They then add 0.1 cc. of serum to 5 cc. each of these solutions of calcium chloride and boil the whole lot in a water bath for fifteen minutes, during which time the tubes must be shaken continually. The authors state that the reaction of Weltmann demonstrates a displacement to the right in productive and nonactive processes and a displacement to the left in exudative progressive forms. In a combination of exudative and fibrous processes, the Weltmann reaction can give the result only of a present and prevalent process. A normal result can be obtained in cases of tuberculosis tending toward cirrhosis and of stationary and cavitary tuberculosis if the flare up from the cavern is practically over. The erythrocyte sedimentation speed is always accelerated in pulmonary tuberculosis. The lower values are in serious destructive forms, the higher in forms tending toward sclerosis. Serum coagulation reveals best the fundamental anatomopathologic state of the disease form, while the reaction of sedimentation is the exponent of humoral conditions of the organism at the expense of a greater or lesser bacillary intoxication. The two reactions are almost identical in their dependence on an equilibrium disturbance of protein fractions (increase of globulin, diminution of serum albumin). By removing a certain amount of fibrinogen in the process of coagulation and by precipitating some of the globulin with calcium chloride, one finds the serum albumins in so weak a proportion as to necessitate for coagulation a greater amount of calcium salt (increase of electrolytic threshold). The internal mechanism of serum coagulation in fibrous formation appears more obscure when it happens in the lower dilutions beyond the limit of normal subjects. In conclusion the authors state that the sedimentation speed can serve to correct or complete the results of the reaction of Weltmann but that in most cases the latter is of greater value for the diagnosis of the form of the disease.

Archivos de Medicina Cirugía y Espec., Madrid

35: 509-528 (June 25) 1932

*Hyperstereoroentgenography in Differential Diagnosis of Round Intrathoracic Shadows. F. R. Partearroyo, J. Miñana and F. Blanco.—p. 509.
Hepatosplenography Following Injection of a Thorium Dioxide Preparation. M. F. Arce.—p. 515.

Hyperstereoroentgenography in Diagnosis of Round Intrathoracic Shadows.—Partearroyo and his associates state that, during the performance of a roentgen examination of the chest, both the pathologic formations and the vessels intercept the roentgen rays and produce a shadow in the roentgenogram. If one or several vessels are orientated in the same direction as that of the roentgen rays, they project themselves as round shadows in the roentgenogram. In clinical practice, vascular shadows have been interpreted, sometimes, as caused by tuberculous nodules. The differentiation between vascular and nodular shadows may be made by the characteristics in the roentgenogram: general localization, number of images, seat,

form and homogeneousness of the shadow. However, the indispensable condition to consider a shadow as given by a tuberculous nodule (and hence as having a pathologic meaning) is its stability; that is, that its dark color has always the same intensity in serial roentgenograms. The authors emphasize that they do not mean that all pulmonary shadows of various sizes are always vascular projections, although they call attention to the fact that not all the round shadows observed in the hilus and parahilus are given by tuberculous nodules; that is, that the shadows of small assumed tuberculous nodules in the peripheral area of the lung are not always of a hematogenic origin. Frequently the vessels project like shadows that are similar to those given by nodules of a hematogenic origin. Hyperstereoroentgenography is the most perfect method to differentiate these types of shadows in the roentgenogram of the chest.

Deutsche medizinische Wochenschrift, Leipzig

58: 997-1038 (June 24) 1932

Cerebral Activity of the New-Born. W. Catel.—p. 997.
Healing Prospects of Duodenal Ulcer in Internal Treatment. A. Böhme.—p. 1002.
*Clinical Aspects of Acute Calcareous Bursitis of Shoulder. K. H. Erb and W. Friedriszik.—p. 1004.
New Method of Histamine Treatment in Painful Disturbances of Muscles, Nerves and Joints. E. Bettmann.—p. 1006.
Experiences with Cataphoretic Histamine Treatment and New Points of View for Its Application. S. Vas.—p. 1009.
Apparatus for Capillary Photography Anywhere on Surface of Body. K. A. Bock.—p. 1012.
Treatment of Rickets. L. Loeffler.—p. 1013.
Therapy of Disorders of Skin. W. Osterweil.—p. 1014.
Prophylaxis and Therapy of Anemia in Children. K. Ochsenius.—p. 1015.

Acute Calcareous Bursitis of Shoulder.—Erb and Friedriszik point out that since Duplay described periarthritis humeroscapularis there has been a tendency to resort to this diagnosis in many of the disorders in the region of the shoulder joint. The description of four typical cases of acute calcareous bursitis shows that the pain in the shoulder frequently develops without preceding trauma or after a slight one. The nocturnal exacerbation of the pain is especially characteristic, and the patients are unable to use the arm. Abduction is impossible on account of the severe pain. The point particularly sensitive to pressure is localized by most patients on the tuberculum majus or directly below the acromion. Roentgenoscopy corroborates the diagnosis of calcareous bursitis by revealing a shadow about the size of a bean either caplike above the tuberculum or in the space between tuberculum and acromion. Treatment with hot air or, better yet, with diathermy quickly counteracts the pain and restores the function of the arm within several weeks. Roentgenoscopy reveals that the calcium depot soon begins to disappear, and later examinations show complete disappearance. The authors point out that there are also cases in which calcium depots are located in the subdeltoid space, particularly on the tendon of the supraspinatus, but these depots have, at least in the beginning, no connection with the bursae. If after treatment with heat or with diathermy the acute pain and also the calcium depot disappear, the disorder was acute calcareous bursitis; but if this is not the case tophaceous gout may be assumed, for which, in case of failure of conservative therapy, operative removal of the calcium focus is advisable.

Deutsche Zeitschrift für Chirurgie, Berlin

236: 269-380 (June 15) 1932

Modification of Experimental Fat Embolism by Medicaments. W. Vogel.—p. 269.
Pancreatic Cysts: Etiology, Results of Surgical Treatment and Relation to Later Development of Diabetes Mellitus. F. Bernhardt.—p. 281.
*Artificial Hardening of Anterior Mediastinum. H. Polano.—p. 300.
Total Mastoneoplasty Following Amputation of Mamma. W. Reinhard.—p. 309.
Clinical Aspects and Treatment of Pulsating Exophthalmos. F. Loos and F. J. Irsigler.—p. 318.
Fractures of Cervical Vertebrae. M. Laesecke.—p. 329.
Tuberculosis of Cortex of Calcaneus. C. Blumensaat.—p. 349.
Noteworthy Sequelae of Accidental Injury of Ligamentum Patellae. K. H. Erb.—p. 357.
Dental Prosthesis as Cause of Perforation of Palate. K. H. Erb.—p. 363.

Artificial Hardening of Anterior Mediastinum.—According to Polano, the main cause of the occasional failures in the surgery of the sternum is, besides the circulatory weakness, the mediastinal flutter. The unphysiologic mobility of the mediastinum causes severe circulatory and respiratory disturbances, for a normal circulation is dependent on the immobility of the mediastinum, as it exists before the thorax is opened. To preserve this immobility after the equilibrium has been disturbed two methods are possible; namely, the use of Sauerbruch's cabinet and artificial hardening of the mediastinum. The latter method, which Rehn first demonstrated in animal experiments, becomes understandable when the anatomic conditions are considered, which the author investigated carefully on human cadavers. He explains the significance of the anterior mediastinal cavity for the circulation, particularly the superior vena cava. The various anatomic relations of the pericardium to the manubrium and corpus sterni lessen the rigidity of this upper portion of the mediastinum, but by a technic of injection it is possible to make the mediastinum firm. The fact that this can be done in human subjects provides a valuable aid in preventing serious pressure disturbances in interventions on the thorax, and thus the artificial hardening represents a helpful addition to the Sauerbruch cabinet.

Klinische Wochenschrift, Berlin

11: 1049-1088 (June 18) 1932

Significance of Thyroid for Course of Ray Reaction of Skin. F. Ellinger.—p. 1049.
"Readily Split Off" Blood Iron and Blood Pigment. G. Barkan.—p. 1050.
Coprohematology: Clinical Examination of Feces for Presence of Deuteroporphyrin. I. Boas.—p. 1051.
Further Observations and Investigations on Postvaccinal Encephalitis. A. Eckstein, F. Sioli, H. Herzberg-Kremmer and K. Herzberg.—p. 1053.
*Contrast Examination of Spleen and Liver with Thorium Dioxide. F. Büchner.—p. 1058.
Results of Animal Experiments with Viosterol. G. Pallaske.—p. 1060.
*Reduced Resistance of Erythrocytes in Intestinal Disorders. H. Schwarz and M. Taubenhaus.—p. 1063.
Examination and Estimation of Ferment Preparations. S. Hermann and P. Neuschul.—p. 1065.
*Influence of Disturbances of Acid-Base Equilibrium on Development of Edema. J. Fliederbaum.—p. 1067.
Acetonemic Vomiting in Children. W. Heymann.—p. 1069.
Change of Iso-Electric Point of Hemoglobin and Its Relation to Acid-Base Metabolism. J. Glass and G. Groscurth.—p. 1070.
Changes in Physicochemical Characteristics of Hemoglobin and in Acid-Base Equilibrium Following Extirpation of Spleen in Dogs. G. Groscurth and J. Glass.—p. 1071.
Tuberculous Rheumatism. J. Bauer.—p. 1071.

Contrast Examination of Spleen and Liver with Thorium Dioxide.—Büchner reports observations which indicate that a considerable quantity of the thorium dioxide preparation that is introduced for visualization of the spleen and liver cannot be eliminated from the organism. The retention produces functional weakening of the reticulo-endothelial system and of the lymph follicles of the spleen. Whether serious late complications will result from the blockage will require further investigations.

Reduced Resistance of Erythrocytes in Intestinal Disorders.—It is pointed out by Schwarz and Taubenhaus that a change in the resistance of the erythrocytes, particularly a reduction of the resistance toward sodium chloride solutions, is generally considered characteristic for hemolytic icterus. However, so far the literature has no reports on a decreased resistance of erythrocytes in gastro-intestinal disorders. For this reason the authors feel justified in reporting the clinical histories of two patients with severe gastro-intestinal disturbances, in whom there existed hypochromic anemia, hypocholesteremia and a considerable reduction in the resistance of the erythrocytes toward physiologic solution of sodium chloride. Both patients had a tumor of the spleen, but there were no signs whatever for hemolytic icterus. The causes of the decreased resistance of the erythrocytes was not demonstrable, either clinically or experimentally. But the authors think that the reduced cholesterol content may be of significance, since several investigators have called attention to the relation between the cholesterol content of the blood and the resistance of the erythrocytes.

Disturbances of Acid-Base Equilibrium and Edema.—In summing up his observations, Fliederbaum writes as follows: 1. Patients with edema have a tendency to retain acids and bases in their tissues; the retention of acids is primary,

that of alkalis, resulting from their attraction by the excess of acids, is secondary (neutralization retention). 2. The local acidosis of the skin and of the subcutaneous connective tissue increases the affinity for water; the local alkalosis decreases it. 3. In patients with edema, acids increase the retention of water and alkalis decrease it.

Medizinische Klinik, Berlin

28: 849-884 (June 17) 1932

Is Sex Specific Incretion Produced by Interstitial Cells of Gonads? H. Stieve.—p. 849.
Dietary Treatment of Patients with Circulatory Disturbances. H. Schwarz and H. Dibold.—p. 857.
Clinical Aspects of Hay Fever. Lucie Adelsberger and H. Munter.—p. 860.
*Oral Sugar Therapy in Icterus Gravis. R. Scholl and P. Steiner.—p. 864.
Treatment of Chronic Gouty Eczemas, of Frost-Bites and of Angiospasms of Extremities with Warmth. R. Sachs.—p. 865.
Electrocardiographic Demonstration of Fatal Ventricular Fibrillation in Case of Thrombosis of Left Coronary Artery. R. Leiser.—p. 866.

Oral Sugar Therapy in Icterus Gravis.—Thinking that it would be a distinct gain to be able to counteract severe disorders of the liver not only by the combined administration of dextrose and insulin but also by oral administration of sugar alone, Scholl and Steiner studied the efficacy of sugar without insulin in diseases of the liver that resemble acute yellow atrophy. They were induced to try this by the observation that rats which were given large amounts of carbohydrates were less susceptible to phosphorus. The authors decided to employ sugar therapy in patients who after prolonged arsphenamine medication had developed a disturbance which can be designated as subacute yellow atrophy of the liver. The patients received a diet of various farinaceous foods, and in addition they were given daily from 30 to 60 Gm. of levulose. The six patients who were treated in this manner either showed considerable improvement or were completely cured.

Monatsschrift für Kinderheilkunde, Berlin

53: 301-482 (June 9) 1932

Complement Fixation Reaction in Tuberculosis (Activity Diagnosis). K. G. Heymann and Ellen Nussbaum.—p. 301.
Pubertas Praecox in Osteodystrophia Fibrosa. Vera Gaupp.—p. 312.
*Carbon Dioxide in Respiratory Disturbances of the New-Born and of Premature Infants. A. Peiper and O. Cammann.—p. 323.
Outcome of Genuine Nephrosis Beginning During Childhood. Ilse Abraham.—p. 329.
Behavior of Basal Metabolism During Short and Prolonged Fever. B. Essig.—p. 335.
Behavior of Basal Metabolism in Underweight Nurslings. B. Essig.—p. 343.
Problem of Premature Infant. J. Schoedel.—p. 349.
*Differential Diagnosis of Thrombosis of Splenic Vein. Helga Schmiedeberg.—p. 361.
Further Experiences with Whooping Cough Vaccine. H. Schmidt and M. Weichsel.—p. 373.
Prophylaxis and Therapy of Whooping Cough by Means of Vaccine. Bäumler.—p. 378.
Prognosis of Diphtherotoxic Cardiac and Circulatory Disturbances During Childhood. F. Thoenes.—p. 381.
Serologic Demonstration of Active Tuberculosis. M. Weichsel.—p. 390.
*Contagiousness of Icterus Catarrhalis Before Manifestation of Its Symptoms. Susanne Seyffarth.—p. 398.
Animal Experiments on Enteral Production of Intoxication in Exsiccosis. Alice Chassel and S. Rosenbaum.—p. 399.

Carbon Dioxide in Respiratory Disturbances of the New-Born.—After mentioning the measures that are usually employed to counteract the respiratory disturbances of the new-born, Peiper and Cammann call attention to the use of carbon dioxide mixtures, as recommended by Yandell Henderson. In order to determine the influence of carbon dioxide on the respiration of the new-born, the authors studied its action on premature infants because the latter are especially subject to respiratory disorders. The respiratory changes that took place under the influence of carbon dioxide mixtures were graphically recorded. It was found that the changes were not regular. In a number of cases shock reactions were noted in the beginning of the administration, and there were also permanent reactions. Occasionally, interruptions of the respiration were observed. In infants in whom there was a gasping for breath, carbon dioxide was less effective than other measures, such as artificial respiration and the administration of a lobelia preparation or of epinephrine. Thus the authors are not convinced that the respiratory disturbances in nurslings can be effectively treated with carbon dioxide.

Differential Diagnosis of Thrombosis of Splenic Vein.—On the basis of three case reports, Schmiedeberg shows that (1) even if most or all of the clinical manifestations of thrombosis of the splenic vein are present, this is not an absolute proof that it really exists, and (2) whenever these symptoms do exist, no matter whether they are or are not caused by a thrombosis of the splenic vein, the removal of the enlarged spleen gives the best prospects for improvement or cure.

Contagiousness of Icterus Catarrhalis Before Manifestation of Symptoms.—Seyffarth states that although the length of the incubation period in icterus catarrhalis has been repeatedly discussed, nothing has so far been said as to whether the infecting person transmits the disease during the incubation period, the prodromal period or after the symptoms have become manifest. For this reason the author feels justified in reporting the clinical history of a child who was infected with icterus catarrhalis by a person in whom the prodromal stage began twelve days later and the icterus became manifest eighteen days later. In the child the prodromal stage began twenty-three days following the contact with the infecting person, and the icterus became manifest on the twenty-sixth day.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

102: 233-430 (June 24) 1932

*Roentgenologic and Anatomic Investigations on Backache, with Especial Consideration of Sacralization. E. Philipp.—p. 233.
Highest Number of Uterine Contractions in Spontaneous Delivery of Primiparas with Narrow Pelvis and Premature Rupture of Bag of Waters. E. Frey and H. Rüfenacht.—p. 262.
Highest Number of Uterine Contractions in Spontaneous Delivery of Multiparas with Narrow Pelvis and with Exclusion of Premature Rupture of Bag of Waters. E. Frey and B. Reger.—p. 297.
*Bacterial Flora of Uterine Cavity During First Week of Puerperium. E. Petrowa.—p. 335.
Pathology of Sarcomas of Female Sex Organs, Particularly of Uterus. W. Haase.—p. 344.
Primary Scar Carcinomas of Vagina. B. Ottow.—p. 350.
Aspects of Cerebral Air Embolism in Induced Abortion. C. Neller.—p. 374.

Backache, with Especial Consideration of Sacralization.—Philipp points out that when gynecologic disorders are absent it is usually difficult to detect the cause of backache in women. Therefore, if a careful gynecologic and general examination does not reveal the cause, he advices roentgenologic examination. He himself did this in a large number of cases and in order to be better able to evaluate the roentgenograms he compared them with photographs of pelves from an obstetric collection. In discussing sacralization and lumbarization he states that he observed all the successive stages, beginning with simple anomalies of the transverse process and ending with bilateral sacralization of the fifth lumbar vertebra, in which there exist five instead of four pairs of sacral foramina. Observations on a number of women convinced him that those patients complain of backache in whom the vertebral statics are disturbed, in whom demonstrable articular changes exist, or in whom these two conditions concur. However, in patients with coalescence of the vertebrae but without disturbed statics or without articular changes, backache may be absent. In discussing the prognosis the author states that whenever the pain concurring with sacralization is caused by static disturbances, adaptation and with it disappearance of painfulness can be expected after a shorter or longer period. Articular pains may persist for a number of years, but after that they likewise disappear. In the last part of the article the author emphasizes once more the great value of roentgenoscopy.

Bacterial Flora of Uterus During First Week of Puerperium.—In reviewing the literature on the bacterial contents of the uterine cavity during the puerperium, Petrowa found that the majority of the earlier studies were made with the aerobic methods of cultivation, whereas the micro-organisms of the vulva and of the vagina are primarily anaerobic. She thinks that this explains the contradictory results of some of the earlier investigators, and in the course of her studies on forty healthy puerperas, each of whom was subjected to two tests, she employed the newest methods for the cultivation of anaerobic organisms. In 10 per cent of the cases, both tests were negative, and in 35 per cent one test was negative.

Micro-organisms enter the uterus most frequently in the first twenty-four hours of the puerperium, but in some instances they enter on the third, fourth or fifth day. In some instances the types of micro-organisms change, or several are present at the same time. Such variations are probably due to bactericidal powers of the uterus, to discharge of the fluid and to the antagonism of the micro-organisms to each other. The invasion of the uterus by pathogenic organisms does not necessarily cause clinical changes in the course of the puerperium.

Zeitschrift für Kinderheilkunde, Berlin

53: 1-120 (June 16) 1932

Physiology of Digestion in Nurslings: Ferment Content of Digestive Organs in Dystrophic and Dyspeptic Conditions. O. Naumann.—p. 1.
*So-Called Hepatolienal Disorders in Children. M. S. Massloff.—p. 21.
Viscosimetric Investigations on Absorption of Water by Plasma Colloids. J. Jochims.—p. 42.
Idem. J. Jochims.—p. 59.
Clinical Aspects and Pathogenesis of Acetonemic Vomiting in Children. L. Salomonsen and H. Bjelke.—p. 66.
Changes in Magnesium Content During Different Ages, Particularly in Rickets and Tetany During Childhood. E. Krüger.—p. 83.
Clinical Hematology During Childhood: Hepatosplenomegalies with Gastro-Intestinal Hemorrhages. E. Stransky.—p. 92.

So-Called Hepatolienal Disorders in Children.—Studies on 127 cases convinced Massloff that, in the development of the hepatolienal syndrome, the endogenic factors, a congenital weakness and a constitutional predisposition play an important part. The different forms of hepatolienal disorders have in common the involvement of the connective tissue apparatus, and observations indicate that the changes in the connective tissue are not secondary but rather primary. The designation of hepatolienal disorders is therefore not entirely correct, since liver and spleen are important only so far as the pathologic processes of the connective tissue become manifest especially in them. Essentially these disorders are not diseases of the liver and spleen but rather of the connective tissue or, more correctly, of the entire mesenchyme, for which reason the author designates them as mesenchymoses. He differentiates various forms of mesenchymoses, and in discussing the practical results of his studies he points out that in the combat of the hepatosplenic disorders the entire organism should be considered and the object should be general strengthening of the organism, the reduction of the predisposition and the elimination of injurious factors from the milieu. Children who deserve especial care and observation are those with hereditary deficiencies (alcoholism, mental disturbances, general debility of the parents and syphilis), as well as children from large families with a high mortality rate. Endangered are also children with backward physical development, with dry skin and with decreased turgor. Another group of children deserving especial consideration are those with the various diseases of the blood (splenic anemia, thrombopenia), with chronic constipation, with diarrheas, with enlarged liver and spleen and with general debility, also children who have passed through the so-called icterus simplex. For such children hydrotherapeutic measures, gymnastics, massage and light sports are advisable. Infections should be guarded against, and alcohol and large quantities of meat should be avoided.

Zeitschrift für Tuberkulose, Leipzig

65: 1-96 (June) 1932

Tuberculosis in the Aged: Significance for Social Hygiene. J. E. Kayser-Petersen.—p. 1.
Clinical Proof for Efficacy of B C G Vaccination in Children. A. Calmette.—p. 10.
Correlation of Allergy and Tuberculous Infection: Experiments on Action of Dissociated Tubercle Bacilli. E. G. Schnieder.—p. 15.
*Roentgen Symptomatology of Intestinal Tuberculosis. J. Rother.—p. 24.
Comparative Physiologic Examination of Working Capacity in Healthy Persons, in Patients with Pneumonoconiosis and in Those with Tuberculosis. W. W. Efimoff, R. A. Radkewitsch, M. M. Eljaschberg and A. W. Efimowa.—p. 37.
Bilateral Pneumothorax Treatment in Pulmonary Tuberculosis. S. von Záborszky.—p. 49.
Expectorant Treatment of Disorders of Respiratory Organs. F. Köhler.—p. 55.

Roentgen Symptomatology of Intestinal Tuberculosis.—Rother states that the general clinical observation does not permit a definite decision about the tuberculous involvement of the intestine, for postmortem examinations have revealed that tuberculous patients who during life had had severe intestinal symptoms were free from tuberculous lesions, whereas others who had had slight symptoms showed severe lesions. Even the presence of tubercle bacilli in the feces is not demonstrative for intestinal tuberculosis, since in open tuberculosis there is the possibility of swallowing sputum containing bacilli. Intestinal roentgenoscopy of 150 tuberculous patients convinced the author that in the majority of cases the presence, type and location of tuberculous lesions of the intestine are revealed by this method. In discussing the technic of intestinal roentgenoscopy, he evaluates the two methods of introduction of the contrast medium: the contrast clysma and the contrast meal. He recommends beginning with the contrast clysma, because it is quicker and usually gives a good roentgenogram of the large intestine. While the medium is being introduced, the outline, haustrum formation and motility of the large intestine are carefully observed before the roentgen screen, and the sensitiveness to pressure is likewise watched. The author further describes the roentgenologic outlines of the various tuberculous lesions that are observed on the intestine: swelling or ulcerations of the mucous membrane, the aspects of the so-called polypous-dysenteric intestinal tuberculosis, further stenoses, prestenotic dilatations, and particularly the changes at the site where large and small intestine join. Although the introduction of the contrast medium by means of the clysma reveals the condition of the large intestine, it is nevertheless advisable to examine the small intestine; this is best done by means of oral administration of the contrast medium. After describing characteristic tuberculous changes the author gives several case reports and shows roentgenograms of certain lesions. He emphasizes the significance of roentgenoscopy particularly for surgical treatment.

Zentralblatt für Chirurgie, Leipzig

59: 1553-1616 (June 25) 1932

*New Method for Blood Transfusion. R. Boller.—p. 1554.
Which of Numerous Surgical Methods Should be Employed in Hallux Valgus. J. Hass.—p. 1561.
*New Type of Bone Suture. J. Petřivalský.—p. 1564.
Protective Clamp for Stump of Appendix in Retrograde Extirpation. O. Struck.—p. 1568.
Treatment of Inguinal Hernia According to Bassini's Method. G. Ricci.—p. 1569.
Invagination Following Gastro-Enterostomy. A. Angerer.—p. 1572.

Method for Blood Transfusion.—In the introduction Boller enumerates the requirements of a good technic for blood transfusion; he thinks that none of the numerous methods fulfil all of them. He discusses particularly some of the disadvantages of the addition of sodium citrate to the blood and shows that although it does not, as some assert, injure the erythrocytes, it causes more severe fever reactions than unchanged blood; the fact that the blood comes in contact with the air is likewise a disadvantage. The author then describes his own method of blood transfusion, which he says can be employed by any physician who has a good technic of intravenous injection. In this method the blood is withdrawn with syringes from the vein of the donor and introduced directly into the vein of the patient. To make it possible to transfuse by means of thin cannulas larger quantities (500 cc. and more), a method had to be found to prevent clotting. This was done by inserting between the needle and the syringe a special device that makes it possible to rinse the cannula with physiologic solution of sodium chloride while the blood stream is interrupted during the change of syringes. The author gives a detailed description of the device, which is the same for the needle of the donor and of the recipient, and then describes the technic of the transfusion, which requires the presence of two physicians and of a nurse. A transfusion of 500 cc. can be completed in from five to eight minutes, but if the patient is extremely weak it can be given more slowly. The author employed this method in eighty cases and never observed injurious effects either on the donor or on the patient.

New Type of Bone Suture.—After discussing the indications for a bone suture, Petřivalský describes and illustrates his method. With an electric drill, oblique canals are made through the compact mass of the bone above and below the fracture. Through these canals a rust-free steel wire is passed, crossed in the figure-of-eight manner and then tightened with

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specially constructed forceps. In evaluating the advantages of this wire suture, the author emphasizes not only that the crossed wire can be tightened readily but also that the parts of the bone are thereby approximated exactly. Where the wire touches the periosteum this is opened so that the wire is mostly subperiosteal, but otherwise the periosteum should be preserved as much as possible. If the bone is narrow one wire suture is sufficient, but in the case of the humerus or of the femur or of the flat cranial bones at least two sutures are necessary. The figure-of-eight wire suture can be employed also in case of splintering of the bone. Another advantage of this method is that the wire passes only through the compact portion of the bone and the marrow and the formation of a marrow callus is not disturbed. The author has employed this method for about a year, and he is entirely satisfied with the results. He does not claim that it is the best method but emphasizes its simplicity and states that the anatomic as well as the functional results are satisfactory.

Jurnal Nevropatologii i Psikhiatrii, Moscow

No. 1, 1-148, 1931

Idealistic Tendency in Present-Day Western European Psychiatry. V. A. Vnukov.—p. 17.
Anthropologic Studies Applied by Soviet National Democrats. M. B. Krol.—p. 25.
Psychohygienic Movement in Relation to U. S. S. R. Reconstruction. L. M. Rozenshtein.—p. 35.
Psychoneurologic Centers as Part of Medical Program. K. Monakhov.—p. 43.
Problems in Psychohygiene and Psychiatry in International Exhibition at Dresden (1930). A. O. Edelshtein.—p. 47.
Sclerometry and Tonometry in Study of Muscle Tonus. I. I. Rusetskiy.—p. 53.
Visual Conditional Reflex in Dogs with Extirpated Left Occipital Lobe. P. M. Rozentsveig.—p. 59.
Pathogenesis of Miliary Neurosis and Miliary Granuloma in Dementia Paralytica. V. K. Beletskiy.—p. 68.
Pathogenesis of Dementia Paralytica: Pyrotherapy and Malaria Therapy. V. V. Korneev.—p. 73.
*Differential Diagnosis of Alcoholic Intoxication: Gans-Rodiet Symptom of Scleral Hemianesthesia. A. V. Ilyin.—p. 78.
Clinical Aspect and Pathologic Anatomy of Abscess of Brain. D. S. Futer.—p. 83.
Is Schizophrenia a Separate Nosologic Entity? A. A. Perelman.—p. 87.
Psychopathic Personality Influenced by Exogenous Factors. B. R. Gurvich.—p. 97.
Birnbaum's Pathoplastic Psychosis. S. P. Ronchevskiy.—p. 104.
Ergot Psychosis: Case. P. Stolina.—p. 108.
*Psychic Disturbance in Chorea Minor of Adolescents. S. I. Kogan.—p. 111.
*Constitutional Predisposition to Chorea Minor. E. A. Osipova.—p. 120.

Diagnosis of Alcoholic Intoxication: Gans-Rodiet Symptom.—Ilyin states that his experimental studies with animals and his clinical observations substantiate his belief that hemianesthesia of the sclera, or the symptom of Gans-Rodiet, is present in various forms of clinical alcoholism and whenever alcoholic intoxication has an etiologic significance. This symptom may be present together with symptoms indicating disturbance in the nictitating and supra-orbital reflexes, with anesthesia of a peripheral type, with ataxia in the hands and sluggishness of the facial expression. The phenomenon is due to a disturbance in the motor reflexes of the mimetic muscles, especially those innervated by the facial nerve and the first branch of the trifacial nerve.

Psychic Disturbance in Chorea Minor of Adolescents.—Kogan gives four personal observations consisting of patients aged 16, 17, 18 and 23 with psychic symptoms in favor of a diagnosis of chorea minor. The diversity of psychic symptoms in both schizophrenia and chorea minor may be explained by the contiguity of the regions in the brain responsible for each disease. The author believes a virus may have been responsible in two of his cases, while the fact that there was an epidemic of rheumatism in the vicinity may explain the independent development of chorea minor in the other two patients as well as the simultaneous appearance of chorea minor in all four of the patients, who were older than those usually affected with chorea minor.

Constitutional Predisposition to Chorea Minor.—Osipova states that the appearance of chorea minor is dependent not only on a toxico-infectious factor but also on an inherited predisposition to the disease. Her studies proved that the various elements of the somatopsychic structure of the disease were similar to those present in the parents. The somatic constitutional changes were characterized by general weakness, cardiovascular deficiency, and predisposition to various infections; the neuropsychic constitutional changes were characterized by instability of the sympathetic nervous system, weakness in the sensorimotor nervous system, and low psychic tonus. Extensive catamnestic studies led the author to believe that constitutional predisposition to chorea is peculiar to asthenic types of individuals with a specific motorium and that chorea is a cerebral disease with changes in the motor as well as the sensory spheres.

No. 3, 1-98, 1931

Control of Figures and Problems in Organized Neuropsychiatry for 1931. G. Karanovich.—p. 3.
Preparing Medical Psychoneurologic Centers. L. M. Rozenshtein.—p. 12.
Present Day Concepts of Occupational Therapy and Mental Disease. V. A. Miznikov.—p. 30.
*Sprue Psychosis. A. Yu. Viyasnovskiy.—p. 35.
De Clérembault-Kandinsky Pseudohallucination Syndrome as Indication of Lost Personality. A. A. Perelman.—p. 44.
So-Called Acute Leyden-Westphal Ataxia. M. G. Jislin.—p. 54.
Nature of Acute Leyden-Westphal Ataxia. Sh. A. Rossin.—p. 61.
Combination of Symptomatic Epilepsy with Schizophrenic Process: Case. S. Kunyavskaya.—p. 70.
*Anatomoclinical Study of Sleep: Optic Thalamus and Aqueduct of Sylvius as Zones of Sleep Regulation. V. E. Mikheev.—p. 75.
Influence of Bilateral Extirpation of Occipital Lobes on Visual Conditioned Reflex. B. M. Rozentsvaig.—p. 83.

Sprue Psychosis.—Viyasnovskiy discusses six cases and concludes that patients with sprue can develop psychoses at the onset as well as at the termination of the disease. Delirium and hallucinations predominate in the catamnesis and the psychic disturbance should be regarded seriously in the prognosis quoad vitam. The psychoses appear most often in individuals with a burdensome inheritance or with a constitutional weakness of the nervous system. In fatal issues, examination at necropsy shows pathologico-anatomic changes specific for sprue and also microscopic and macroscopic changes in the central nervous system. The latter are of circulatory origin and are a result of instability of the hemato-encephalitic barrier.

Study of Sleep.—Mikheev presents the catamnesis in five patients with tumor of the brain and a tendency to sleepiness during the course of the disease. Sleepiness seemed to be concomitant with the appearance of ptosis and paralysis of the upper eyelids. The author's anatomopathologic studies led him to believe that the zones for regulation of sleep lie in the region of the optic thalamus and particularly the aqueduct of sylvius.

Bibliotek for Læger, Copenhagen

124: 181-222 (June) 1932

*Circulatory Relations in Varicose Syndrome. H. Haxthausen.—p. 181.
*Roentgen Diagnosis of Intestinal Invagination. E. Thomsen.—p. 202.
Mode of Action of Insulin. N. A. Nielsen.—p. 216.

Circulatory Relations in Varicose Syndrome.—Haxthausen says that measurement of the temperature of the skin in varicose lower extremities showed no noticeable decrease from the normal in the cutaneous blood supply. The hypothesis of stasis in varices as the cause of ulcer and eczema and the theory of nutrition of the skin with "used" venous blood cannot therefore be maintained. Varices diminish the ability to counteract hydrostatic pressure by muscular movements and thus lead to the formation of filtration edemas and defective resorption of these. The patients and the regions where this condition is most marked are especially liable to cutaneous complications, and there is therefore reason to assume a causal relation between the two.

Roentgen Diagnosis of Intestinal Invagination.—In Thomsen's first patient, a child aged 3, the roentgen picture supported the diagnosis of invagination. Laparotomy revealed a ring of enlarged lymph nodes about the right flexure of the colon, to which the localized intestinal spasm during the roentgen examination is ascribed. The patient had enteritis with melena. In the second, fatal case, in an infant aged 9 months, with rectal prolapse, the roentgen diagnosis was also misleading. On operation an ileocecal invagination was found, complicated by fibrous bands encircling various portions of the intestine. After disinvagination, three perforations were seen on the intussusceptum.